Energy

UNIT ONE

Lessons of the unit :

1. Light.
2. Seeing coloured objects.
3. Magnetism.
4. Magnetism and electricity.

Final Revision Includes

- Definitions.
- Give reasons for.
- Comparisons.
- Important points.
- Importance or use.
- What happens when ... ?
- Activities.

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Unit

FIRST: Final Revision on Unit One

1 Definitions

Item	Definition
1. Visible spectrum :	It is the light energy that can be seen.
2. Shadow :	It is the darkened area which is formed as a result of falling light on an opaque object.
3. Transparent material :	It is the material which lets most light to pass through and objects can be seen clearly (with full details) through it.
4. Semi-transparent (translucent) material :	It is the material which lets some light to pass through and objects can be seen through it less clearly than the transparent one.
5. Opaque material :	It is the material that doesn't allow light to pass through and objects can't be seen through it.
6. Light reflection :	It is the bouncing (returning back) of light rays when light falls on a reflecting surface.
7. Regular reflection :	It is the reflection of light when it falls on a smooth and shiny reflecting surface, where the light rays are reflected directly in one direction.
8. Irregular reflection :	It is the reflection of light when it falls on a rough reflecting surface, where the light rays are reflected and scattered in different directions.
9. Light refraction :	It is the change in the direction of light rays when light passes through a separating surface between two different transparent media, due to the change in the light speed.
10. Light separation :	It is the separation of white light into seven spectrum colours.
11. Primary coloured lights :	They are coloured lights which cannot be broduced by mixing two other coloured lights.
12. Secondary coloured lights :	They are coloured lights that are produced by mixing two of the primary coloured lights.
13. Natural magnet :	It is a black rock and it is one of iron ores called magnetite.
14. Artificial magnet :	It is made by man and has many different shapes and sizes.

15. Magnetic materials :	They are the materials which are attracted to the magnet.
16. Non-magnetic materials :	They are the materials which are not attracted to the magnet.
17. Two poles of magnet (magnetic poles) :	The regions (areas) of magnet which have the most powerful force of attraction. **(or)** The regions of magnet at which most of the attraction force (magnetism) is concentrated.
18. Magnetic field :	It is the space around the magnet in which the effect of magnetic force appears.
19. Magnetic force :	It is the ability of the magnet to attract the magnetic materials existed in its field.
20. Electromagnet :	It is a temporary magnet which is made by the effect of electricity.

2 Importance or use

Item	Importance or use
1. Glass prism :	It separates white light (sunlight) into seven spectrum colours.
2. Magnet :	– It attracts the magnetic substances as iron, nickel, steel and cobalt. – It is used in our daily life in making the magnetic compass and the electric generator (dynamo).
3. Magnetic compass :	It is used to identify the main four geographical directions.
4. The electromagnet :	– It converts the electric energy into magnetic energy. – It is used in : • Making big-sized winches (cranes) to move (lift) the heavy iron blocks in factories. • Making many appliances (devices) as the electric bell, the electric mixer, the disc drive and television.
5. The electric generator (dynamo) :	– It converts the mechanical (kinetic) energy into electric energy. – It is used in electric power stations to generate a large amount of electricity used for lightening cities and operating factories.

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3 Give reasons for

1. **Moon is not considered as a source of light.**
   Because the moon light is the reflection of the sunlight that falls on its surface.

2. **The moon seems luminous.**
   Because it reflects the sunlight that falls on its surface.

3. **The formation of images through narrow holes.**
   Because light travels in straight lines.

4. **Shadow of an opaque body is formed when light falls on it.**
   Because light travels in straight lines.

5. **A clear glass and transparent plastic are transparent materials.**
   Because they allow most light to pass through and objects can be seen clearly (with full details) through them.

6. **A tissue paper is a translucent material.**
   Because it allows some light to pass through and we cannot see objects clearly through it.

7. **Aluminium foil is an opaque material.**
   Because it doesn't allow light to pass through and objects cannot be seen through it.

8. **Objects can be seen clearly through transparent materials.**
   Because transparent materials allow most light to pass through.

9. **Objects cannot be seen clearly through the frosted glass.**
   Because frosted glass is a translucent material which lets some light to pass through.

10. **We can't see anything behind wood.**
    Because wood is an opaque material that doesn't allow light to pass through.

11. **You can see your image in a plane mirror.**
    Due to the regular reflection of light.

12. **• Seeing the pen bending in a transparent cup of water.**
    • A spoon appears broken when it is placed in a cup of water.
    Due to the refraction of light.

13. **A light beam changes its direction when it passes from air to water.**
    Due to the refraction of light.

14. The formation of light spectrum.
Due to the separation of white light into seven spectrum colours.

15. White light can be separated.
Because it consists of seven spectrum colours.

16. The rainbow appears in the sky during rainfall.
Because the drops of water in air act as a prism which splits the sunlight into seven spectrum colours.

17. The green glass window seems green when a white light strikes it.
Because it is a transparent object, where it absorbs all light colours and allows the green colour only to pass through.

18. The transparent and semi-transparent bodies appear coloured with the light that pass through them.
Because the transparent and semi-transparent bodies absorb all light colours and permit their own colours only to pass through.

19. The red apple seems black when you look at it from a green glass sheet.
Because the red apple reflects the red colour which is absorbed by the green glass sheet and doesn't transmit through it, so the apple seems black.

20. A banana fruit seems yellow when sunlight falls on it.
Because the banana fruit absorbs all light colours and reflects the yellow colour only.

21. We must wear white clothes in summer season.
Because white clothes reflect all light colours that fall on them causing the decrease of feeling of heat.

22. The red transparent ruler appears red when white light falls on it.
Because it absorbs all light colours and allows the red colour only to pass through.

23. When sunlight falls on a white paper, it appears white.
Because white objects reflect all light colours that combine together forming white light.

24. It is preferred to wear black clothes in winter.
Because black clothes absorb all light colours that fall on them causing the feeling of warmth.

25. If a white light strikes a transparent blue glass sheet, the blue light only transmits through it.
Because the transparent coloured object absorbs all light colours and allows its own colour only to transmit through.

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26. Red, green and blue are called primary coloured lights.
Because they can't be produced by mixing two of the other coloured lights.

27. Yellow, magenta and cyan are called secondary coloured lights.
Because they are produced by mixing two of the primary coloured lights.

28. The chalk appears white, while the board appears black.
Because the white opaque objects (chalk) reflect all light colours, while the black opaque objects (board) absorb all light colours.

29. Some materials are called magnetic materials.
Because they are attracted to the magnet.

30. Some materials are called non-magnetic materials.
Because they are not attracted to the magnet.

31. The magnet attracts nickel, but doesn't attract aluminium.
Because nickel is a magnetic material, while aluminium is a non-magnetic material.

32. Aluminium, copper and glass are considered as non-magnetic materials.
Because they are not attracted to the magnet.

33. Iron, nickel and cobalt are considered as magnetic materials.
Because they are attracted to the magnet.

34. One of the poles of the magnet is called north pole, but the other is called south pole.
Because one of the two poles always points to the north pole of the Earth, but the other points to the south pole of the Earth.

35. The north pole of the magnet attracts the south pole of another magnet, but repels the north pole.
Because the like (similar) magnetic poles repel each other, while the dislike (different) magnetic poles attract each other.

36. When you immerse a magnet in iron filings, the iron filings are *attracted* at the two poles of the magnet.
Because the magnetic force of the magnet is concentrated at its two poles.

37. The compass is used to locate the main four geographical directions.
Because its north pole refers to the north direction of the Earth and its south pole refers to the south direction of the Earth.

38. The box of compass isn't made from iron.
To avoid the attraction between the magnetic needle and the iron box of the compass.

39. When an electric current flows through a wire winding around a wrought iron nail, the nail attracts iron filings.
Because the electric current changes the wrought iron nail into a temporary magnet called electromagnet.

40. When an electric current flows through a wire that is put beside a compass, the compass needle deflects.
Because the electric current has a magnetic effect, where it generates a magnetic field.

41. It is preferable to increase the number of coil turns in the electromagnet.
To increase the magnetic force of the electromagnet.

42. In the electromagnet, we must increase the number of batteries.
To increase the electric current intensity that increases the magnetic force of the electromagnet.

43. The lifted steel blocks by the electromagnet fall down by cutting off the electric current that flows through the coil of the electromagnet.
Because by cutting off the electric current, the electromagnet loses its magnetic force.

44. The presence of a battery in the electromagnet is important.
Because the battery is the source of the electric current.

45. We must increase the number of coil turns and the number of *batteries in* the electromagnet.
To increase the magnetic force of the electromagnet.

46. The electromagnet is very important.
Because it is used in factories to lift the heavy iron or steel blocks and used in making many appliances as electric bell, electric mixer, disc drive and television.

47. The magnet which is made by electricity is called temporary magnet.
Because it changes the electric energy into magnetic energy.

48. The small cylinder in the bicycle's dynamo touches the bicycle's wheel tire.
Because by moving the bicycle's tire, the magnet that connected with the cylinder moves, so the electric current is generated in the coil causing lightening of the lamp.

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49. The deviation of the ammeter's pointer when moving the copper wire between the two poles of a magnet.
Due to passing the electric current through the copper wire.

50. The deflection of ammeter's pointer increases by increasing the motion of coil between the two poles of a magnet.
Due to the generation of more electric current in the copper wire.

51. The huge *electric* generator is used in the electric power stations.
To generate large amount of electricity used for lightening cities and operating factories.

52. Dynamo changes the mechanical energy into electric energy.
Because by moving the magnet in the coil, an electric current is generated.

53. In dynamo, we use a strong magnet and increase the number of turns in the moving coils.
To increase the produced amount of electricity.

4 What happens when ... ?

1. You look at a lightened candle through three screens with centered holes, where the candle and screens are in one straight line.
I can see the flame of the candle, because light travels in straight lines.

2. You place an opaque object between a light source and a screen.
A clear shadow of the object is formed.

3. You place a transparent object between a source of light and a screen.
No shadow is formed.

4. You look at your image through a transparent material.
I can see the picture clearly.

5. You look at a picture through a frosted glass.
I cannot see the picture clearly.

6. You look at a picture through a metallic sheet as aluminium foil.
I cannot see the picture.

7. You look at a mirror.
I can see my image due to the reflection of light.

8. You look at a spoon (pen) that is put in a beaker containing water.
The spoon (pen) seems broken due to the refraction of light.

9. • **White light passes through a prism.**
   • **Sunlight passes from drops of rain water to air during raining.**
   The white light is separated (splitted) into seven spectrum colours.

10. **Seven spectrum colours are mixed together.**
    A white light is formed.

11. **Green light strikes a black object.**
    The black object absorbs the green colour and appears black.

12. **White light strikes a red apple.**
    The red apple absorbs all light colours and reflects the red colour only, so it seems red.

13. **White light strikes a transparent yellow bottle.**
    The yellow bottle absorbs all light colours and allows the yellow colour only to transmit through.

14. **You look at a green apple through a red glass sheet.**
    The apple seems black.

15. **Mixing green and blue lights.**
    Cyan light is produced.

16. **White light falls on a white ball.**
    The ball reflects all light colours and appears white.

17. **White light falls on a banana fruit.**
    The banana fruit absorbs all light colours and reflects the yellow colour only.

18. **Mixing red light with blue light.**
    Magenta light is produced.

19. **Mixing red light with green light.**
    Yellow light is produced.

20. **A strong magnet is put close to a piece of nickel.**
    The piece of nickel is attracted to the magnet.

21. **A strong magnet is put close to a piece of wood.**
    The piece of wood is not attracted to the magnet.

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22. Some iron nails are put close to the middle of the magnet.

The iron nails are not attracted to the middle of the magnet.

23. A magnet is immersed completely in an amount of iron filings.

The biggest amount of iron filings is attracted to the two poles of the magnet and this amount decreases gradually until it disappears at the middle of the magnet.

24. You get a magnet close to a mixture of iron pins, cobalt, chalk and pieces of paper.

The magnet attracts the iron pins and cobalt only as they are magnetic substances.

25. A magnet is hanged to move freely.

It takes a fixed direction which is north-south direction.

26. You put the north pole of a magnet close to the north pole of another magnet.

The two poles repel each other.

27. You approach the north pole of a magnet to the south pole of another magnet.

The two poles attract each other.

28. You scatter some iron filings on a glass sheet which is put on a strong magnet, then knock on the sheet slightly.

The iron filings are arranged around the magnet in a regular way and attracted at the two poles of the magnet.

29. Fixing a magnetic needle on a piece of cork, then put it in a basin containing water.

The north pole of the needle always points to the north pole of the Earth and its south pole always points to the south pole of the Earth.

30. An electric current flows through a wire winding around a wrought iron bar.

The iron bar becomes a temporary magnet called "the electromagnet".

31. An electric current flows through a wire winding around a wrought *iron nail* that is immersed in iron filings.

The iron nail attracts iron filings as it becomes an electromagnet.

32. Cutting off the electric current passing through the coil of the electromagnet of the winch.

The electromagnet loses its magnetic force and iron blocks fall down.

33. A magnet is moved inside a coil of wire that is connected to an electric lamp.

The lamp lights due to the generation of an electric current through the wire.

34. You move a magnet through a coil or moving a coil between the two poles of a magnet.

The mechanical (kinetic) energy changes into electric energy.

35. Increasing the motion of coil between the two poles of a magnet in the dynamo.

It causes increasing of electric current that is generated from dynamo.

5 Comparisons

1. Comparison between transparent, translucent and opaque materials.

Points of comparison	Transparent material	Translucent material	Opaque material
Definition :	It is the material which lets most light to pass through and objects can be seen clearly (in full details) through it.	It is the material which lets some light to pass through and objects can be seen through it less clearly.	It is the material that doesn't allow light to pass through and objects can't be seen through it.
Examples :	- Clear glass. - Clear water. - Air. - Transparent plastic.	- Frosted glass. - Tissue paper.	- Rocks. - Aluminium foil. - Wood. - Carton.

2 Comparison between regular reflection and irregular reflection.

Points of comparison	Regular reflection	Irregular reflection
Definition :	It is the reflection of light on a smooth and shiny reflecting surface, where the light rays are reflected directly in one direction.	It is the reflection of light on a rough reflecting surface, where the light rays are reflected and scattered in different directions.
Example :	Light reflection when it falls on any smooth surface as mirror.  Smooth surface	Light reflection when it falls on any rough surface as white paper (which contains protrusions and tiny holes).  Rough surface

3 Comparison between primary coloured lights and secondary coloured lights.

Points of comparison	Primary coloured lights	Secondary coloured lights
Definition :	They are coloured lights which impossible to be produced by mixing two other coloured lights.	They are coloured lights that are produced by mixing two of the primary coloured lights.
Examples :	Red, green and blue.	Yellow, magenta and cyan.

4 Comparison between magnetic materials and non-magnetic materials.

Points of comparison	Magnetic materials	Non-magnetic materials
Definition :	They are the materials which are attracted to the magnet.	They are the materials which are not attracted to the magnet.
Examples :	Iron - steel - cobalt - nickel.	Chalk - glass - paper - aluminium - copper - wood.

5. Comparison between electromagnet and dynamo.

Points of comparison	Electromagnet	Dynamo
The structure :	A copper wire coiled (twisted) around a bar of wrought iron and this wire connected to a battery.	A copper coil and a magnet.
The idea of working :	It converts the electric energy into magnetic energy	It converts the mechanical (kinetic) energy into electric energy.
Uses :	It is used in making : - Big-sized winches (cranes). - Electric bell, electric mixer, disc drive and television.	It is used in electric power stations to generate electricity

6. Comparison between the small dynamo in a bicycle and the huge dynamo (electric generator).

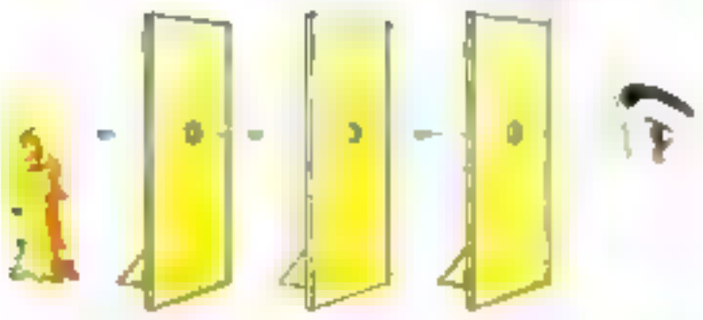
Point of comparison	Small dynamo in a bicycle	Huge dynamo
Structure :	It consists of : - A small cylinder that touches the bicycle's wheel tire. - This small cylinder is connected with a U-shaped (horse-shoe) magnet that is surrounded by a coil	It consists of : Many great coils that turn between the two poles of a huge magnet.

6 Activities

Activity 1 To prove that light travels in straight lines.

Steps:

1. Put the three wooden screens in a row, where all the holes of the screens and the flame of the candle are on one straight line.



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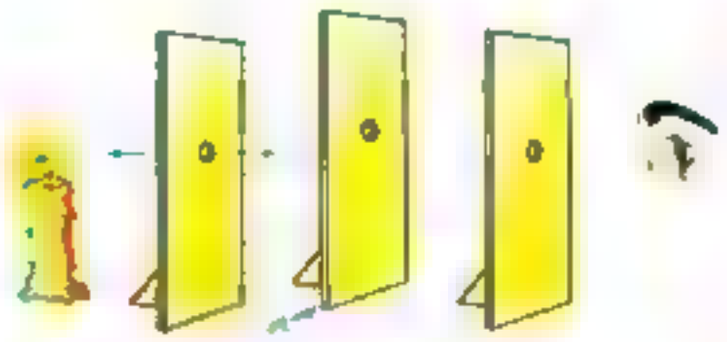
Observation:

You can see the flame of the candle.

2. Move any of the screens to the right side or the left side.



Observation:

You cannot see the flame of the candle.

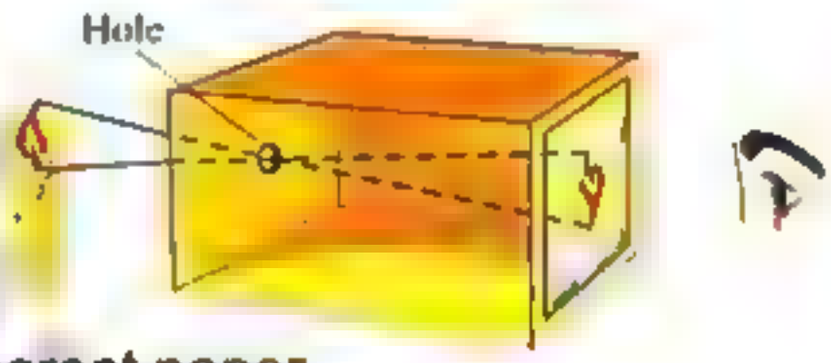
Inference :

Light travels in straight lines.

Activity 2 To prove that formation of images through narrow holes is due to travelling of light in straight lines.

Step:

Form the opposite structure.



Observation:

A minimized and inverted image for the candle flame is formed on the semi-transparent paper.

Inference :

Formation of images through narrow holes is due to the travelling of light in straight lines.

Activity 3
- To show that the magnet has two poles.
- To discover the regions (areas) of the magnet which have the ability to attract more.

Step:

Approach a bar magnet to metallic paper clips.

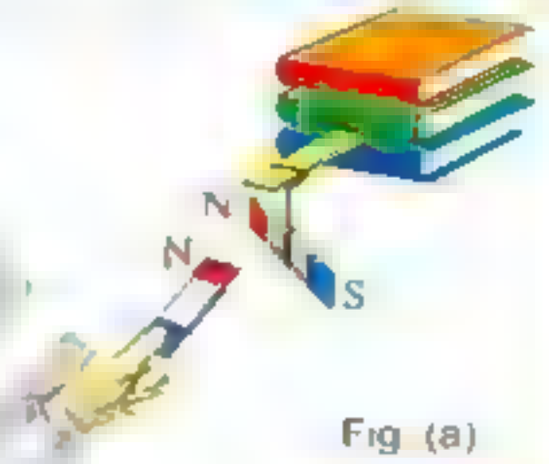
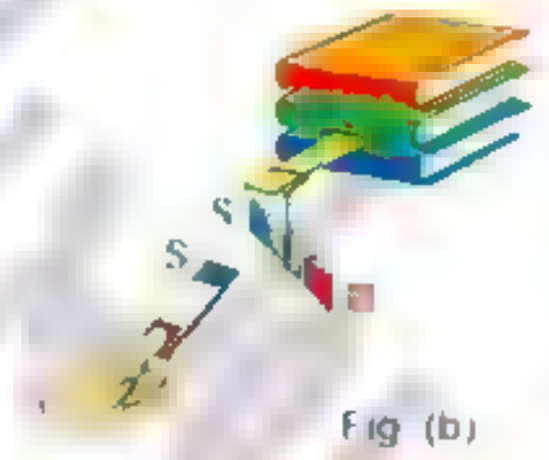
Observation:

The greatest number of the metallic paper clips is attracted to the two ends of the magnet, then it decreases gradually until it disappears in the middle.

Inference :

The regions of the magnet which have the most attraction force are the two ends which are called "two poles of magnet".

Activity 4 To prove that like (similar) magnetic poles repel, but dislike (opposite) magnetic poles attract.

Steps	Figures	Observations
1. Bring two bar magnets and hang one freely by a thread, then leave it to settle.	 Fig (a)	- The freely hanged magnet takes the north-south direction.
2. Approach the north pole of the other magnet to the north pole of the hanging magnet as in fig. (a).		- The two north poles repel each other.
3. Approach the south pole of the magnet to the south pole of the hanging magnet as in fig. (b).	 Fig (b)	- The two south poles repel each other.
4. Approach the north pole of the magnet to the south pole of the hanging magnet as in fig. (c).	 Fig (c)	- The north pole attracts the south pole.

Inference :

The similar (like) magnetic poles repel each other, but the opposite (dislike) magnetic poles attract each other.

Activity 5 To illustrate the magnetic field of a magnet by using iron filings.

Steps:

1. Put a bar magnet horizontally on a table, then put a glass sheet on it.
2. Sprinkle some iron filings on the glass sheet, then knock on it slightly.

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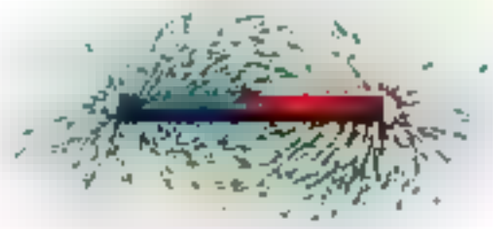
Observations:

- Iron filings are arranged around the magnet in a regular way.
- The biggest amount of iron filings are assembled at the two poles of the magnet.



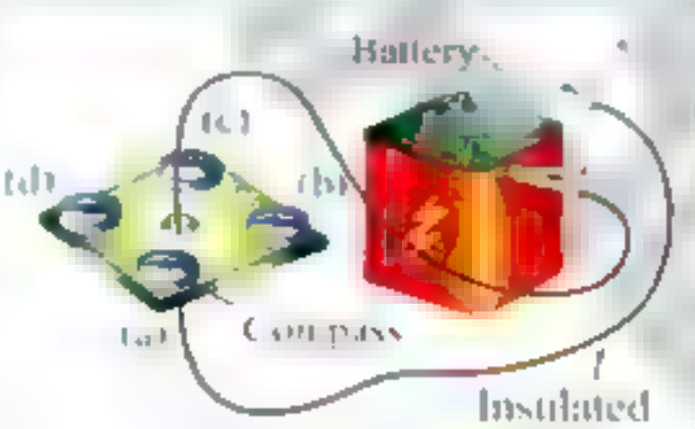
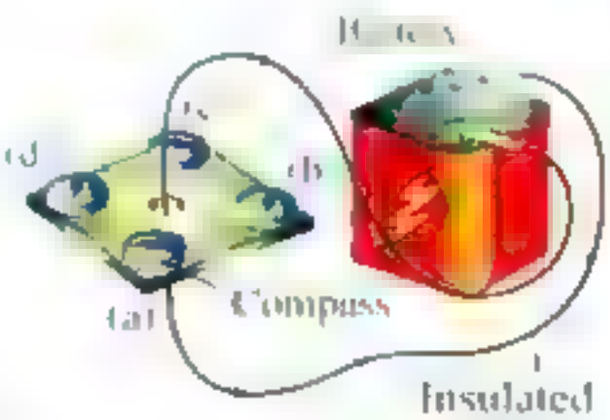
The magnetic field of a magnet by using iron filings

Inferences :

1. The magnetic field around the magnet takes a regular shape.
2. The greatest magnetic force of the magnet is concentrated at the two poles.

Activity 6

- **To show the magnetic effect of the electric current.**
- **To prove that the electric current can generate a magnetic field.**

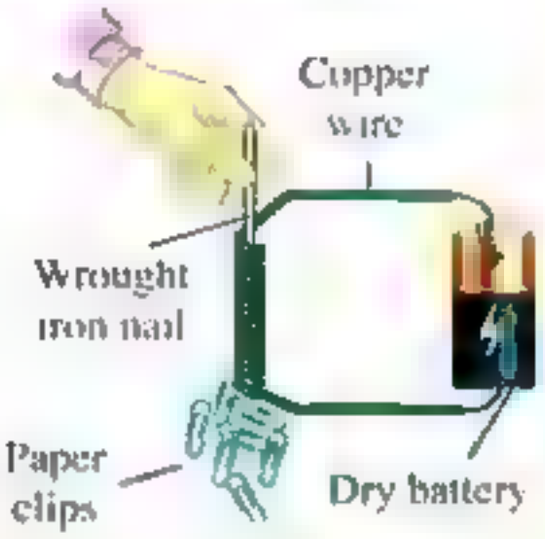
Steps	Figures	Observations
1. Put the insulated wire beside the compass which is put in four different positions as in fig. (a).	 Fig. (a)	1. The compass needle doesn't deflect.
2. Connect the wire ends with the two poles of the battery, then notice the compass needle in the four different positions as in fig. (b).	 Fig. (b)	2. The compass needle deflects after the flowing of electric current through the wire.

Inference :

The electric current has a magnetic effect, where it generates a magnetic field.

Activity 7

- To prove that magnetism can be gained by electricity.
- To show the idea of working the electromagnet.



Step:

Form the opposite structure.

Observation:

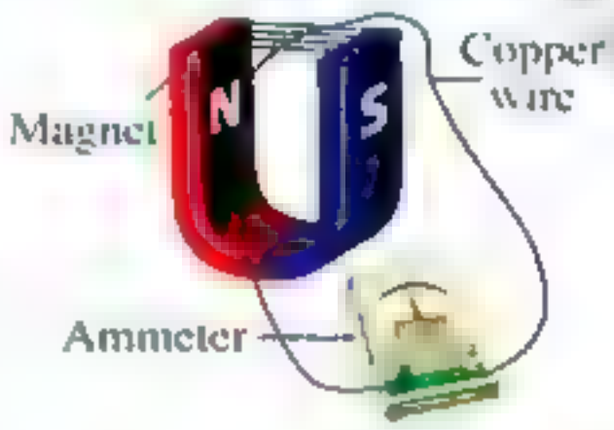
The iron nail attracts the paper clips.

Inference :

When an electric current passes through a coil winding around a wrought (soft) iron nail, the iron nail becomes a temporary magnet that is called "the electromagnet".

Activity 8

- To show the idea of operating the dynamo.
- To prove that the magnetic energy can be changed into electric energy.

Steps	Figures	Observations
1. Put the copper wire (which is connected with ammeter) between the two poles of the magnet.		The pointer of the ammeter doesn't deflect.
2. Move the copper wire from up to down between the two poles of the magnet.		The pointer of the ammeter deflects due to passing the electric current through the wire.

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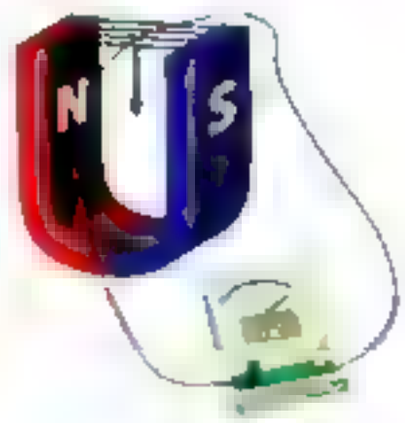
3. Increase the motion of the wire between the two poles of the magnet.		The deflection of the ammeter's pointer increases due to passing more electric current.
4. Fix the wire and move the magnet up and down.		The pointer of the ammeter deflects.

Inferences :

1. The electric current can be generated in a coil of dynamo by :
   a Moving the coil in the magnetic field (between the two poles of the magnet).
   b. Moving a magnet inside the coil
2. The generation of the electric current in the coil of dynamo increases by increasing the motion of coil between the two poles of magnet
3. The idea of operating dynamo is the changing of mechanical (kinetic) energy into electric energy.

7 Important points

1. The **Sun** is the main source of light on the Earth.
2. **Lightened electric lamps**, **lightened candles** and **kerosene lamps** are from the sources of light.
3. As a result of travelling light in straight lines, some phenomena happen as :
   - **Formation of images through narrow holes**.
   - **Formation of shadow**.
4. The idea of camera depends on the **formation of images through narrow holes**.
5. The **nearer** object to the light source has the **bigger** shadow.
6. Factors necessary for light reflection are :
   - **A source of light**.
   - **A reflecting surface**.

7. When you look at a mirror, you notice that the distance between your body and the mirror **is equal to** the distance between your image and the mirror.
8. The colour of the **transparent and translucent objects** is the same colour of **the transmitted light** through them.
9. Opaque objects are divided into :
   - **White objects.**
   - **Black objects.**
   - **Coloured objects.**
10. Coloured opaque object **absorbs all light colours** and reflects its **own colour** only
11. Types of magnet are **natural** magnet and **artificial** (man-made) magnet.
12. Horse-shoe magnet, ring magnet, bar magnet and magnetic needle are **the shapes of artificial magnet.**
13. **The properties of the magnet are :**
    - The magnet has **two poles.**
    - The freely moving (suspended) magnet always takes a fixed direction, which is **north-south direction.**
    - Like magnetic poles **repel** each other, but the dislike magnetic poles **attract** each other.
    - The magnet is surrounded by an area called **"magnetic field".**
14. The magnetized needle is the basic idea in making **the compass.**
15. **The magnetic compass consists of :**
    A light and small magnet that can spin freely around a fixed axis.

The compass

16. **The magnetic force of the electromagnet can be increased by :**
    - Increasing the number of coil turns.
    - Increasing the number of batteries.
17. **The methods to increase the produced amount of electricity from the dynamo :**
    - By using a strong magnet.
    - By increasing the number of turns in the moving coils.

Mixtures

UNIT TWO

Lessons of the unit :

1. Mixtures.
2. Solutions.

Final Revision Includes

- Definitions.
- Give reasons for.
- Important table.
- Activities.
- Uses.
- What happens when ... ?
- Comparisons.
- Important points

Second
Final Revision on Unit Two

1 Definitions

Item	Definition
1. Pure substance :	It is the substance that is made of only one type of identical particles.
2. Mixture :	It is the substance that consists of more than one type of particles.
3. Solid-solid mixture :	A type of mixtures that consists of two or more different solid materials.
4. Liquid-liquid mixture :	A type of mixtures that consists of two or more different liquids.
5. Solid-liquid mixture:	A type of mixtures that consists of solid and liquid matter.
6. Gaseous-gaseous mixture :	A type of mixtures that consists of different gases
7. Gaseous-liquid mixture :	A type of mixtures that consists of gaseous and liquid matter.
8. Homogeneous mixtures :	They are mixtures in which their components can't be distinguished.
9. Heterogeneous mixtures :	They are mixtures in which their components can be distinguished.
10. Solute :	It is the substance which dissolves in a solvent.
11. Solvent :	It is the substance in which solute disperses or dissolves.
12. Solution :	It is a homogeneous mixture in which the solute breaks down into its most basic particles that spread throughout the solvent.
13. Solubility process :	It is the process by which a solute dissolves in a solvent leading to the disappearance of the solute.
14. Suspension :	It is a heterogeneous mixture in which some particles of solute are suspended throughout the solvent

Unit 2

2 Uses

Item	Use
1. Shaking process :	A method used to form solid-solid, liquid-liquid and solid-liquid mixtures.
2. Stirring process :	A method used to form liquid-liquid and solid-liquid mixtures.
3. Grinding process :	A method used to form solid-solid mixtures.
4. Magnetic attraction (magnet) :	It is a method used to separate solid mixtures that contain magnetic substances.
5. Filtration process (filter paper) :	It is used to separate solid materials that are insoluble in water.
6. Evaporation process :	It is a method used to separate solid materials which are soluble in water.
7. Separating funnel :	It is a device used to separate the heterogeneous liquid mixtures whose components don't mix together (as water-oil mixture).

3 Give reasons for

1. **Both distilled water and baking soda are pure substances.**
   Because each of them consists of only one type of identical particles.

2. **Both milk and tomato sauce are mixtures.**
   Because each of them consists of more than one type of particles.

3. **Air is considered a mixture.**
   Because it consists of more than one type of particles such as nitrogen gas, oxygen gas, carbon dioxide gas and water vapour.

4. **Mineral water is considered a mixture.**
   Because it consists of more than one type of particles such as water and some useful minerals such as calcium and magnesium.

5. **Strawberry juice and lemon juice can be mixed by shaking or stirring.**
   Because liquid materials can be mixed to form liquid-liquid mixtures by shaking or stirring.

6. **Filtration process is used to separate sand from sugary solution.**
   Because filtration process is used to separate the solid materials as sand that are insoluble in water.

7. **A magnet can be used to separate iron filings from sand.**
   Because magnet attracts the iron filings and separates them from the mixture.

8. **A mixture of salt and water is different from a mixture of sand and water.**
   Because salt dissolves in water forming salty solution (homogeneous mixture), while sand doesn't dissolve in water (heterogeneous mixture).

9. **No mixing will happen on adding sand to water.**
   Because sand is an insoluble material in water.

10. **The method used to separate a mixture of iron filings and sand is different from that used to separate a mixture of sand and water.**
    Because the mixture of iron filings and sand can be separated by magnetic attraction, but the mixture of sand and water can be separated by filtration process.

11. **Some mixtures can be separated by using the separating funnel.**
    Because the separating funnel is used to separate liquid mixtures whose components don't mix together, the heterogeneous liquid mixtures (as water-oil mixture).

12. **Solution is a type of mixtures.**
    Because it consists of more than one type of particles.

13. **There are different types of mixtures.**
    Because some solid substances are soluble forming homogeneous mixtures (solutions), while others are insoluble forming heterogeneous mixtures (suspensions).

14. **Water is considered a common solvent.**
    Because thousands of solid materials dissolve in it.

15. **Tea and sugary solution are homogeneous liquid mixtures (solutions).**
    Because the components of each of them can't be distinguished from each other.

16. **Mud in water is a heterogeneous mixture.**
    Because the particles of mud can be distinguished from water.

17. **In chocolate-milk, chocolate is considered the solute.**
    Because it is the solid substance that dissolves in milk which is the solvent.

2 Unit

18. The solubility speed depends on the temperature of the solution.
Because when the temperature of the solution increases, the solubility speed increases.

19. The solubility time of sodium chloride in water differs from that of sodium carbonate in the same amount of water.
Because the solubility time depends on the kind of the solute.

20. Dissolving 20 gm. of table salt in 200 ml. of water is faster than dissolving 50 gm. of table salt in the same amount of water.
Because when the amount of the solute increases, the solubility time increases.

21. • Dissolving sugar in hot tea is easier than that in cold lemonade.
• Dissolving salt in heated water is faster than that in cold water.
Because when the temperature increases, the solubility speed increases.

22. • It is better to dissolve sugar in water by heating and stirring.
• The dissolving time of any solid substance in a liquid decreases by stirring and heating.
Because by heating and stirring, the solubility process becomes faster (solubility time decreases).

23. We prefer putting powdered sugar than cubes of sugar in tea.
Because grinding the solid materials increases the speed of their solubility.

24. Salt dissolves easily and faster in a large amount of water.
Because when the amount of solvent increases, the solubility time decreases.

4 What happens when ... ?

1. Shaking or stirring an amount of sugar with water.
A homogeneous mixture (sugar solution) is formed.

2. Putting an amount of sand in a cup of water with shaking, then waiting for a minute.
At first, they seem to be mixed, but with time the sand precipitates in the bottom of the cup.

3. Mixing an amount of oil with an amount of water.
Oil doesn't mix with water and form a layer over it.

4. Heating salty water for a long time.

Water evaporates, leaving the salt in the cup.

5. Grinding salt with pepper.

A mixture of salt-pepper is formed.

6. Mixing different types of juices together.

A liquid-liquid mixture of juices is formed.

7. Dissolving carbon dioxide gas in a sugary solution.

A mixture of soda water is formed.

8. Approaching a magnet to a mixture of sand and steel paper clips.

The magnet attracts the steel paper clips, leaving the sand.

9. Leaving an amount of table salt solution exposed to sunlight for some days.

Water evaporates and table salt can be collected.

10. Adding an insoluble substance to a certain solvent.

A heterogeneous mixture (suspension) is formed.

11. The amount of the solvent increases.

The solubility time decreases.

12. The amount of the solute increases.

The solubility time increases.

13. The temperature of the solution decreases.

The solubility time increases.

14. Stirring a mixture of salt and water.

The solubility time decreases.

15. Stirring two equal amounts of sugar in two beakers contain unequal amounts of water.

The solubility time of sugar in the beaker that has a large amount of water is less than that has a small amount of water

Unit 2

5 Important table

Substance	Method of separation
1. Salt from salty water.	By evaporation process.
2. Iron filings from iron-sand mixture.	By using a magnet.
3. Oil from oil-water mixture.	By using a separating funnel.
4. Sand from water-sand mixture	By using a filter paper (filtration process).
5. Steel paper clips from a mixture of steel paper clips and flour.	By using a magnet.
6. Chalk powder from water.	By using a filter paper (filtration process)
7. Coffee from water.	By using a filter paper (filtration process).

6 Comparisons

1. Comparison between the solute and the solvent.

Points of comparison	The solute	The solvent
Definition :	It is the substance that dissolves in a liquid substance (solvent).	It is the liquid substance in which the solute dissolves.
Example :	Salt in salty solution.	Water in salty solution.

2. Comparison between mixture and solution.

Points of comparison	Mixture	Solution
Definition :	It is the substance that consists of more than one type of particles.	It is a type of mixtures that consists of a solute and a solvent.
Examples :	Fruit salad - vegetable salad - soda water - air.	Sugary solution - salty solution - chocolate milk.

3. Comparison between pure substance and mixture.

Points of comparison	Pure substance	Mixture
Definition :	It is the substance that is made of only one type of identical particles.	It is the substance that consists of more than one type of particles
Examples :	Distilled water - sugar - baking soda.	Concrete - tomato sauce - mineral water.

4. Comparison between homogeneous and heterogeneous mixture.

Points of comparison	Homogeneous mixture	Heterogeneous mixture
Definition :	It is the mixture in which its components can't be distinguished from each other	It is the mixture in which its components can be distinguished from each other.
Example :	Salty solution.	Mud in water.

5. Comparison between solution and suspension.

Points of comparison	Solution	Suspension
Definition :	It is a homogeneous mixture in which the solute breaks down into its most basic particles that spread throughout the solvent.	It is a heterogeneous mixture in which some particles of the solute are suspended throughout the solvent.
Example :	Salty solution.	Mud in water.

6. Comparison between a soluble and an insoluble substance.

Points of comparison	A soluble substance	An insoluble substance
Definition :	- It is the substance that dissolves in a solvent. - The formed homogeneous mixture is called solution	- It is the substance that does not dissolve in a solvent. - The formed heterogeneous mixtue is called suspension.
Example :	Salt in salty solution.	Mud in water.

Unit 2

7 Activities

Activity 1 To separate a solid mixture by using magnetic attraction.

Steps:

1. Mix an amount of sand with an amount of iron filings using gloves.
2. Approach a magnet to the mixture.

Observation:

The magnet attracts iron filings only.

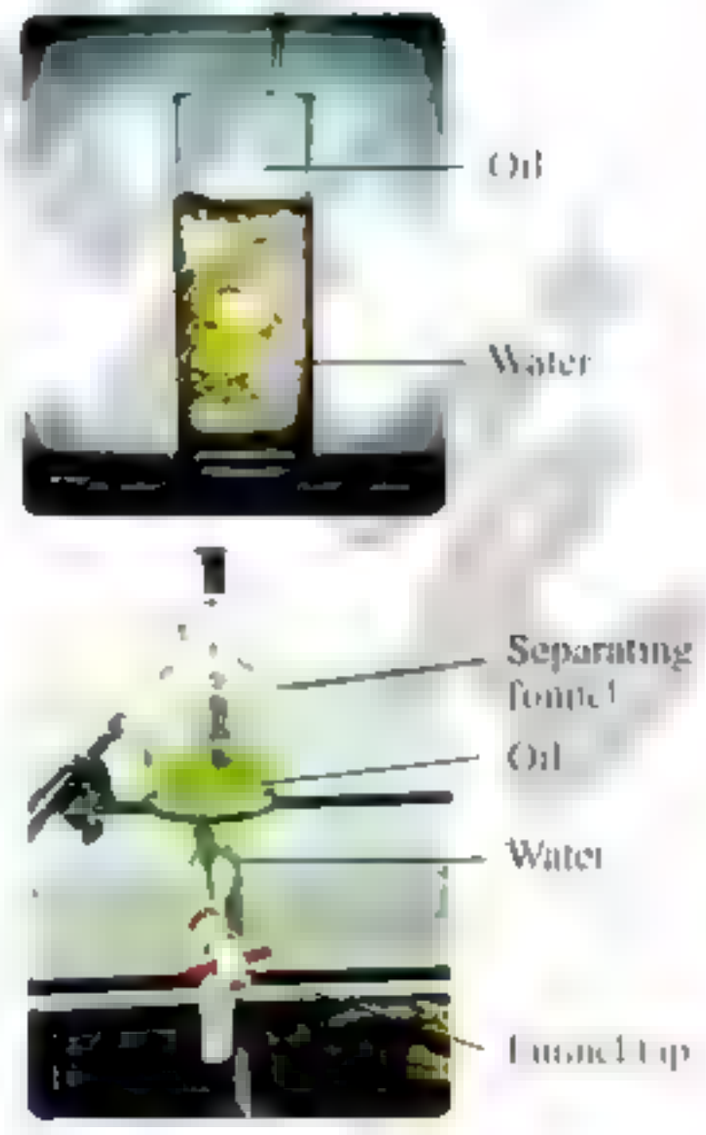
Inference:

A magnet is used to separate the solid mixtures that contain magnetic substances as iron by magnetic attraction.

Activity 2 To separate a heterogeneous liquid mixture (water-oil mixture) by using a separating funnel.

Steps:

1. Add an amount of oil to a cup containing water and shake them well.
2. Pour the mixture into a separating funnel and use its tap to separate water from oil.



Observations:

1. Oil doesn't mix with water, but it forms a layer on the water surface.
2. Water falls down from the separating funnel, but oil remains in the separating funnel.

Inference:

Separating funnel is used to separate heterogeneous liquid mixtures such as water-oil mixture.

Activity 3 To prove that the quantity of solvent affects the solubility process.

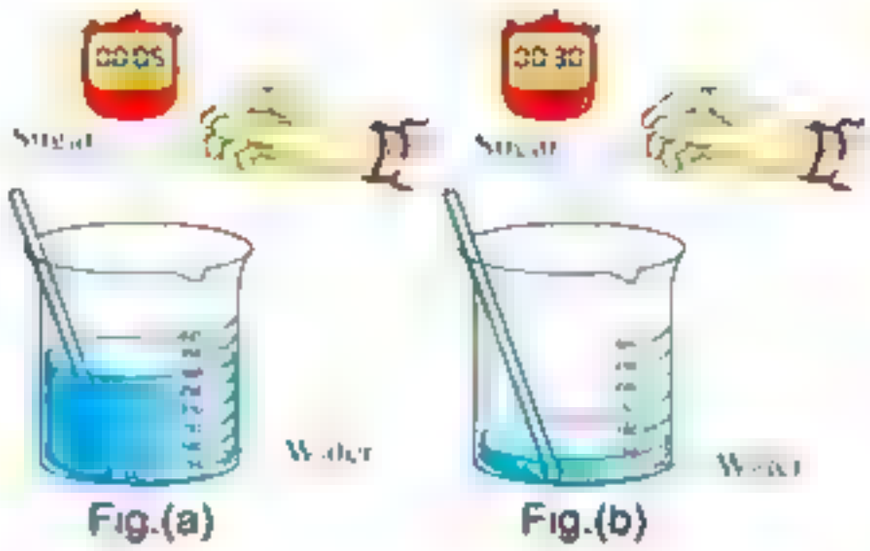


Fig.(a) Fig.(b)

Steps:

1. Stir an amount of sugar (solute) in 300 ml. of water (solvent) as in fig.(a) and stir the same amount of sugar in 50 ml. of water as in fig.(b).
2. Record the time needed for sugar to dissolve completely in each case.

Observation:

Dissolving sugar in fig.(a) is faster than that in fig.(b).

Inference:

Solubility process depends on the amount of solvent, where by increasing the quantity of solvent, the speed of solubility increases and vice versa.

Activity 4 To prove that quantity of solute affects the solubility process.

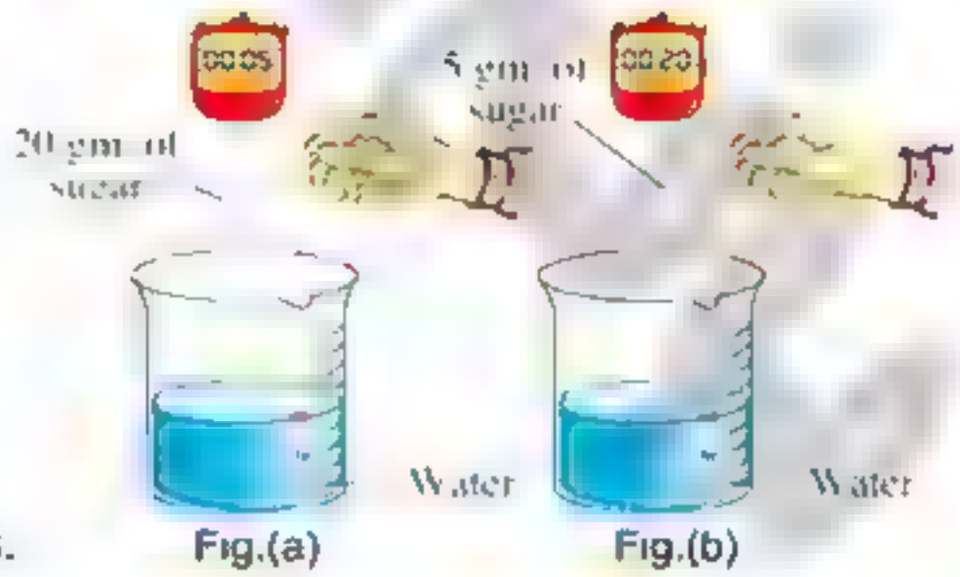


Fig.(a) Fig.(b)

Step:

Form the two opposite beakers and record the time needed for sugar to dissolve in each case.

Observation:

The solubility time increases when the quantity of sugar (solute) increases.

Inference:

Solubility process depends on the amount of solute, where by decreasing the quantity of solute, the speed of solubility increases and vice versa.

2 Unit

Activity 5 To prove that temperature affects the solubility process.

Steps:

1. Put two equal amounts of sugar in two beakers containing the same amount of water as in figures (a & b).
2. Heat beaker (b) and leave beaker (a) without heating, then record the time needed to dissolve sugar in each case.

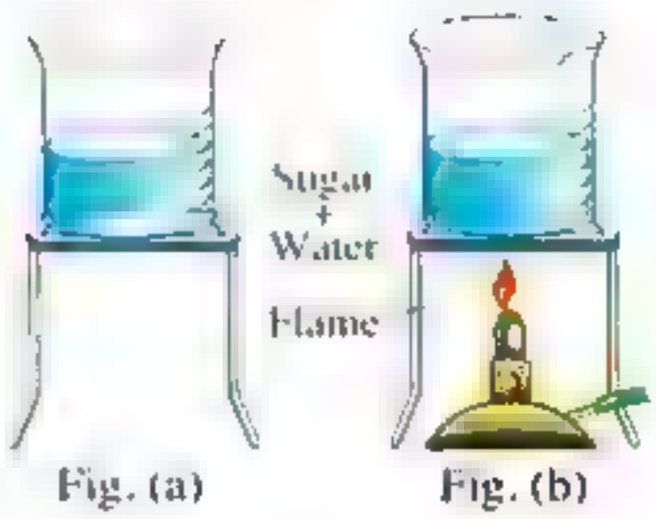


Fig. (a) Fig. (b)

Observation:

Sugar in beaker (b) takes a shorter time to dissolve than in beaker (a).

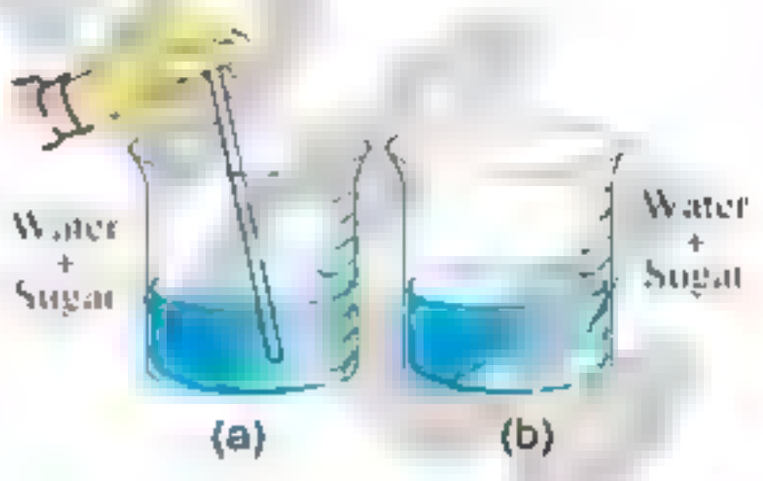
Inference:

By increasing temperature and using the same amount of solvent and solute, the dissolving (solubility) time decreases.

Activity 6 To prove that stirring affects the solubility process.

Step:

Prepare the two opposite beakers, but stir beaker (a) only and record the time needed to dissolve sugar in each beaker.



(a) (b)

Observation:

In case of stirring, the sugar takes a short time to dissolve.

Inference:

Stirring increases the speed of the solubility process.

Activity 7 To prove that the kind of the solute affects the solubility process.

Step:

Form the two opposite beakers, then record the time needed to dissolve each substance.

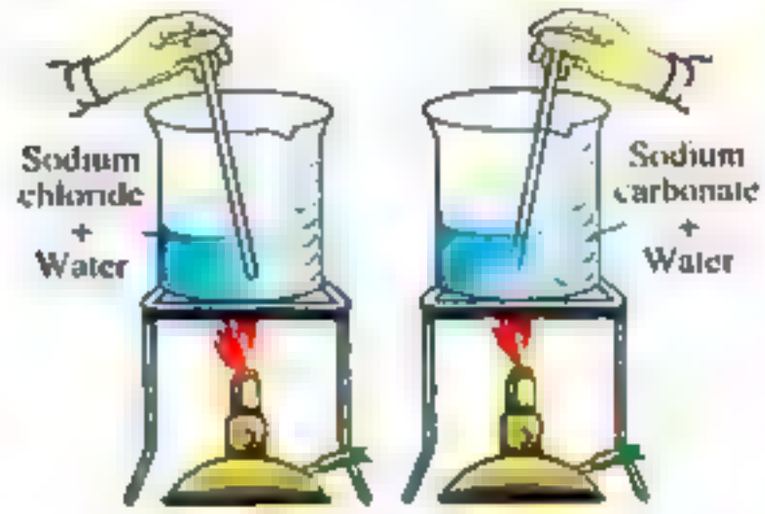


Fig (a) Fig.(b)

Observation:

The time needed to dissolve sodium chloride differs from that needed to dissolve sodium carbonate.

Inference:

The solubility process depends on the kind of the solute.

8 Important points

1. The properties of mixture :

- The components of the mixture don't react together and can be separated easily.
- Each component in the mixture keeps its own properties, so the properties of a mixture are the same properties of its components.
- The components of the mixture can be mixed at any ratio.

2. Methods of formation of mixtures are :

- Shaking. - Stirring. - Grinding.

3. Methods of separating mixtures are :

- Magnetic attraction.
- Filtration process.
- Evaporation process.
- Using a separating funnel.

4. Most mixtures that are formed by dissolving in liquids are **homogeneous mixtures.**

5. On adding **an insoluble substance** to a certain solvent, **a suspension** is formed.

6. Factors affecting the solubility process are :

a. Quantity of solvent and solute.
b. Temperature.
c. Stirring or shaking.
d. The kind of the solute.
e. Grinding the solid materials.

Environmental Balance

UNIT THREE

Lessons of the unit :

1 Food relationships among living organisms.

2 Environmental balance.

Final Revision Includes

- Definitions.
- Give reasons for.
- Important tables
- Important points.
- Importance.
- What happens when ... ?
- Comparisons.

Third Final Revision on Unit Three

1 Definitions

Item	Definition
1. Predation :	It is a food relationship among living organisms, where one living organism devours another one.
2. Predator :	The living organism which devours other living organism.
3. Prey :	The devoured living organism.
4. Camouflage :	A phenomenon in which living organism protects itself (hides) from enemies by changing its colour to simulate the colours of its surrounding environment.
5. Mimicry :	A phenomenon in which the harmless living organisms imitate other harmful or poisonous living organisms to frighten their enemies and escape from them.
6. Mutualism :	It is a food relationship in which each organism gets benefit (in the form of food) from the other.
7. Commensalism :	It is a food relationship between two living organisms, where one of them benefits from the other, while the other neither gets benefit (in the form of food) nor is harmed.
8. Parasitism :	It is a food relationship between two different kinds of living organisms, one benefits from the other and is known as the parasite, while the other is harmed and is known as the host.
9. External parasitism :	A food relationship in which the parasite lives externally on the host's body and feeds by sucking the blood of the host and conveys diseases to the host.
10. Internal parasitism :	A food relationship in which the parasite lives internally inside the host's body and shares the host its digested food or feeds on its tissues and cells.
11. Saprophytism :	It is a food relationship in which saprophytes (decomposers) get their food by decomposing food remains or bodies of dead organisms.

3 Unit

12. Ecosystem :	It is any natural area including living organisms (as plants and animals) and non-living things (as water, soil and air).
13. Environmental balance :	It is the balance among the components of ecosystem.

2 Importance

Item	Importance
1. Predation relationship :	It plays an important role in keeping the environmental balance, where it organizes the numbers of preys' populations.
2. Saprophytic organisms (decomposers) :	1. They help the environment in : a Getting rid of bodies of dead organisms by decomposing them. b Recycling the chemical elements found in the bodies of dead organisms (as carbon, nitrogen and phosphorus) to the environment ,to make other living organisms benefit from them. 2. They help man in some industries as : a. Food industry, where some saprophytic organisms are used in making cheese, yoghurt, vinegar, bread and alcohol. b. Drug industry as in manufacturing some drugs as antibiotics. c. Leather tanning industry.

3 Give reasons for

1. **Plants are called autotrophic organisms.**
   Because they make their own food during photosynthesis process.
2. **Plants are the main food for lions, although lions are carnivorous.**
   Because lions feed on animals (as deers) which feed on green plants.
3. **Predation is a temporary relationship.**
   Because it ends up by devouring the prey or a part of it.
4. **Predation is less common in plant world than in animal world.**
   Because plants are autotrophic organisms that can make their own food by photosynthesis process.
5. **Some plants cannot make protein although they make their own food.**
   Because these plants cannot absorb some compounds from the soil to make protein.

6. • **Drosera and dionaea are known as insectivorous plants.**
   • **Some plants are known as insectivorous plants.**
   Because these plants prey some insects to get their required elements for making protein.

7. **The relation between a wolf and a rabbit is predation.**
   Because wolf feeds on rabbit.

8. **Some animals have the ability to camouflage.**
   To protect themselves from enemies by changing their colour to simulate the colours of their surrounding environment.

9. **A cuttlefish can hide from its enemies.**
   Because it ejects a black fluid in the surrounding water when attacked by enemies to hide from them.

10. • **A butterfly stands on a tree with the similar colour.**
    • **Sepia ejects a black fluid in the surrounding water when attacked by enemies.**
    • **The chameleon simulates the colour of the surrounding environment.**
    To hide from its enemies.

11. • **Some bees look like wasps in forming lines on their bodies.**
    • **Some harmless living organisms imitate other kinds of poisonous living organisms.**
    To fear their enemies and escape from them by mimicry phenomenon.

12. **There is a mutualism relationship between nodular bacteria and leguminous plants.**
    Because nodular bacteria provides the leguminous plants with nitrogen in an inorganic form, while the leguminous plants provide the bacteria with sugar

13. **There is a commensalism relationship between sponge and the tiny aquatic living organisms.**
    Because the tiny aquatic living organisms get food and shelter from the canals and fissures that are found inside the sponge, while the sponge neither gets benefit nor is harmed from these living organisms.

3 Unit

14. Parasitism relationship differs from the predation relationship.

Because the parasite depends completely on the host to get its food and causes weakness to the host, but doesn't kill it as the predator does with its prey.

15. Host death is considered a loss to the parasite.

Because the parasite will lose its source of food and shelter.

16. • Parasitism causes weakness to the host.

• The parasite doesn't kill its host.

Because the parasite depends completely on the host to get its food causing weakness to the host.

17. Lice, bugs, mosquitoes and ticks are external parasites.

Because they live externally on the host's body and feed by sucking its blood.

18. Tape worms, bilharzia and liver worms are internal parasites.

Because they live internally inside the host's body and share the host its digested food or feed on its tissues and cells.

19. Saprophytic organisms are decomposers.

Because they get their food by decomposing food remains or bodies of dead organisms.

20. Bread mold, mushroom and penecillium fungi are saprophytes.

Because they get their food by decomposing food remains or bodies of dead organisms.

21. Plants depend on the soil.

To absorb water and salts to make its own food by photosynthesis process.

22. A disturbance may occure in the environmental balance.

Due to natural changes or man interference.

23. The extinction of dinosaurs in ancient eras.

Due to the change in the natural conditions in the ecosystem that causes the disappearance of dinosaurs.

24. The changing of natural circumstances causes an environmental imbalance.

Because it causes disappearance of some organisms and appearance of other organisms.

25. A competition may appear among preys' populations in the ecosystem.
Due to the insufficient food resources for preys.

26. Predators are useful for the preys' populations.
Because they help preys to get rid of weak or sick members and let the strong ones to reproduce adding strong members to the population.

27. Predation relationship plays an important role in keeping balance within the ecosystem.
Because predation organizes the numbers of preys' populations.

28. Saprophytic organisms give great services to the ecosystem.
Because they help the environment in getting rid of bodies of the dead organisms and recycling the chemical elements found in the bodies of dead organisms to the environment to make other organisms benefit from them.

4 What happens when...?

1. Food producers (as green plants) are not found.
Death of all living organisms.

2. A chameleon is attacked by enemies.
It simulates the colours of its surrounding environment.

3. A cuttlefish is attacked by enemies.
It ejects a black fluid in the surrounding water.

4. There is no nodular bacteria in roots of leguminous plants as beans.
The leguminous plants cannot get nitrogen in an inorganic form.

5. A parasite lives externally on the host's body.
It sucks the blood of the host and may convey diseases to the host.

6. You splash some water drops on a slice of bread and leave it for two weeks.
A dark green layer is formed on the bread, so the bread changes into rotten bread.

7. • **Introducing rabbits into an island with much food and no natural enemies.**
• **Predators disappear from an environment including few rabbits.**
The number of rabbits will increase, so the food resources become insufficient for rabbits that leads to competition between them, so rabbits will die.

Unit 3

8. Cutting down of trees.

A disturbance in the environmental balance will take place.

9. Natural changes take place within ecosystem.

A disturbance in the ecosystem will take place causing a disappearance of some organisms, appearance of other organisms and environmental imbalance.

10. Herbivorous (as rabbits) decrease in the environment.

A competition appears among the predators that feed on herbivorous, so the number of predators will decrease.

11. There are no predators in ecosystem.

The number of preys increases and the food resources become insufficient for preys leading to the competition between preys, so they will die.

12. Absence of preys in the ecosystem.

The environmental imbalance will occur.

13. Preys do not find food and shelter within ecosystem.

A competition takes place between preys to get food and shelter and this causes their death.

14. Saprophytes as bacteria disappear from the planet Earth.

- The Earth's surface will be covered with the bodies of dead organisms.
- Chemical elements found in the bodies of dead organisms will not be recycled to the environment.

15. Chemical elements are not recycled by saprophytic organisms in the ecosystem.

The other living organisms cannot get benefit from these elements.

5 Important tables

1. Some food relationships :

The relation between	Its kind
1. A lion and a deer.	Predation.
2. Drosera and an insect.	Predation.
3. A wolf and a rabbit.	Predation.
4. A cat and a rat.	Predation.
5. Nodular bacteria and leguminous plants.	Mutualism.

The relation between	Its kind
6. Sponge and the tiny aquatic living organisms.	Commensalism.
7. Bread mold fungus and bread.	Saprophytism.
8. Penecillium fungus and orange.	Saprophytism.
9. Mosquito and its host.	External parasitism.
10. Lice and its host.	External parasitism.
11. Liver worm and its host.	Internal parasitism.
12. Fleas and their host.	External parasitism.
13. Jawless lamprey and a fish.	External parasitism.
14. Bugs and their host.	External parasitism.
15. Tape worms and their host.	Internal parasitism.
16. Ascaris worms and their host.	Internal parasitism.
17. Ticks and their host.	External parasitism.

2. Phenomena used by some organisms to hide from their enemies :

The organism	The phenomenon that is used to hide from enemies
1. A butterfly.	**Camouflage.** (It stands on a tree with its similar colours)
2. Some types of frogs.	**Camouflage.** (They simulate the colours of the surrounding environment)
3. A chameleon.	**Camouflage.** (It simulates the colours of the surrounding environment)
4. A cuttlefish.	**Camouflage.** (It ejects a black fluid in the surrounding water)
5. Some bees.	**Mimicry.** (They look like wasps)

3. Parasites and diseases :

Parasite	Its type	Disease caused by it
1. Filaria worm.	Internal parasite.	Elephantiasis.
2. Mosquitoes.	External parasites.	Malaria disease.
3. Ascaris worms.	Internal parasites.	Anaemia disease.
4. Fleas.	External parasites.	Small pox.
5. Bilharzia worms.	Internal parasites.	Bilharziasis disease.

Unit 3

6 Comparisons

1. Between predation and parasitism.

Points of comparison	Predation	Parasitism
1. Definition :	It is a food relationship among living organisms, in which one living organism devours another one.	It is a food relationship between two different kinds of living organisms, where one benefits from the other and is known as the parasite, while the other is harmed and is known as the host.
2. Harms that occur to the host or prey :	The prey is killed in this relationship.	The host becomes weak.
3. Example :	The relation between a cat and a rat.	The relation between jawless lamprey and fish.

2. Between commensalism and parasitism.

Points of comparison	Commensalism	Parasitism
1. Definition :	It is a food relationship between two living organisms, where one of them benefits from the other, while the other neither gets benefit nor is harmed.	It is a food relationship between two different kinds of living organisms, where one of them benefits from the other and is known as the parasite, while the other is harmed and is known as the host.
2. Example :	The relation between sponge and the tiny aquatic living organisms.	The relation between bilharzia worms and man.

3. Between parasitism and saprophytism.

Points of comparison	Parasitism	Saprophytism
1. Definition :	It is a food relationship between two different kinds of living organisms, where one of them benefits from the other and is known as the parasite, while the other is harmed and is known as the host.	It is a food relationship in which saprophytes get their food by decomposing food remains or bodies of dead organisms.
2. Example :	The relation between tape worms and man	The relation between bread mold fungus and bread.

4. Between external parasitism and internal parasitism.

Points of comparison	External parasitism	Internal parasitism
1. The place, where the parasite lives :	The parasite lives externally on the host's body.	The parasite lives internally inside the host's body.
2. The food of the parasite ;	The parasite feeds by sucking the blood of the host.	The parasite feeds by sharing the host its digested food or feeds on its cells and tissues.
3. Examples :	• Mosquitoes. • Lice. • Bugs.	• Bilharzia worm. • Ascaris worm. • Tape worm.

7 Important Points

1. Drosera and dionaea are examples for **insect-eaters plants**.
2. **Camouflage** and **mimicry** are ways of self-defence against predation.
3. **Mutualism**, **commensalism** and **parasitism** are types of symbiosis.
4. Mushroom fungus, bread mold fungus and penecillium fungus are examples for **saprophytes (decomposers)**.
5. An area of land or a water pond are examples for **small ecosystem**, while the universe is **a very large ecosystem**.
6. A forest, a desert or an ocean are examples for **large ecosystem**.
7. Factors harm (disturb) the environmental balance are : **Natural changes and man interference.**
8. The methods of man interference that lead to the disturbance of the environmental balance are :
   - **Cutting down trees.**
   - **Polluting environment.**
   - **Burning forests.**
   - **Eroding the soil.**
9. From the factors that keep the environmental balance are :
   - **Predation.**
   - **Saprophytism.**

Unit 1 Lesson 1

25

Test yourself (1)

Answer each of the following questions :

1 Complete the following sentences : *(5 marks)*

1. ..... is the light energy that can be seen.
2. The image formed in narrow holes is ..... and .....
3. Air, clear water and glass cup are examples for ..... but ..... and ..... are examples for translucent materials
4. ..... is a darkened area which is formed as a result of falling light on an opaque object.
5. Light can transmit through ..... and ..... materials.
6. ..... is not a source of light as it reflects the sunlight.

---

2 (A) Choose the correct answer: *(5 marks)*

1. Light transmits in ..... lines.
   a. curved b. broken c. straight d. zigzag
2. Formation of shadow when light falls on an object is due to .....
   a. travelling of light in straight lines.
   b. formation of images through narrow holes.
   c. transmitting light through transparent materials.
   d. all the previous reasons.
3. The materials which let most light pass through are called ..... materials.
   a. transparent b. translucent c semi-transparent d opaque
4. All the following are examples of semi-transparent materials except .....
   a. tissue paper. b. frosted light bulbs.
   c. frosted glass cup. d. foil paper.

(B) Write briefly about formation of shadow:

.....

.....

---

3 Write the scientific term: *(5 marks)*

1. Materials which allow some light to pass through. (.....)
2. The material that used to cover windows of darkened photographic rooms. (.....)

Test yourself

3. The main source of light on the Earth. (.....)
4. It is the darkened area which is formed as a result of falling light on an opaque object. (.....)
5. The materials, where things can be seen clearly through them. (.....)

4 (A) Look at the opposite figures, then complete the following : *(5 marks)*

1. Observation on figure (a):

.....

.....

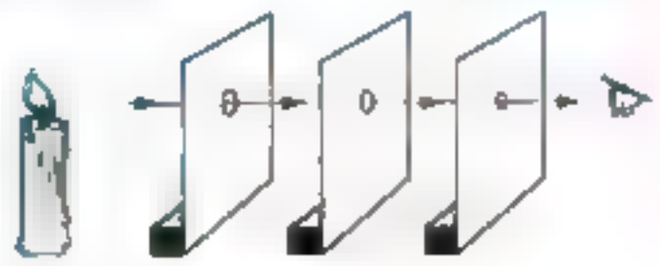


Figure (a)

2. Observation on figure (b):

.....

.....

3. General conclusion:

.....

.....

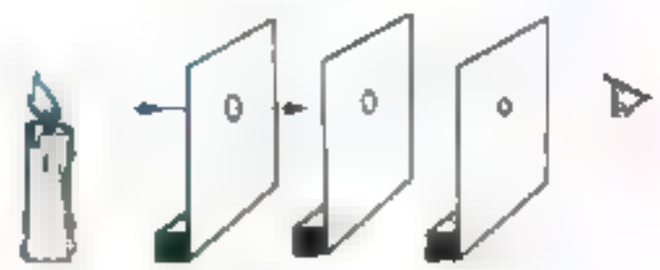


Figure (b)

(B) Choose the odd material out, then write the type of the remaining materials:

1. Aluminium foil – Wood – Carton paper – Tissue paper.
   - The odd material : .....
   - The type of the remaining materials : .....
2. Wood – Glass – Air – Water.
   - The odd material : .....
   - The type of the remaining materials : .....

5 (A) Compare between transparent , translucent and opaque materials. *(5 marks)*

.....

.....

.....

.....

(B) What happens when ... ?

1. You look at a lightened candle through three screens containing holes, where the holes of screens are not on one straight line.

.....

2. You look at a picture through a transparent material.

.....

Unit 1 Lesson 1

25

Test yourself (2)

Answer each of the following questions :

1 Complete the following statements: *(5 marks)*

1. The light bouncing when it falls on an object is called ....
2. When you stand at 40 cm. from a plane mirror, your image is formed at .... cm. from your body.
3. The reflection of light on a mirror surface is .... reflection, while reflection of light on a paper surface is .... reflection.
4. Light .... when it transfers between two different transparent media.
5. A rainbow is produced as a result of ....
6. The spectrum colours start with the .... colour and end with the .... colour.
7. .... and .... are the factors necessary for light reflection.

2 (A) Give reasons for: *(5 marks)*

1. Seeing the spoon bent when immersing it in a transparent cup of water.

   ....

2. Appearance of rainbow in the sky during rainfall.

   ....

   ....

3. You can see your image in a plane mirror.

   ....

(B) Write the use of :

1. Glass prism :

   ....

2. Opaque materials :

   ....

3 Choose the correct answer: *(5 marks)*

1. We can see objects due to ....
   a. light reflection. b. light refraction. c. absorption of light. d. splitting of light.
2. Mixing the seven light spectrum colours gives the .... light.
   a. white b. green c. blue d. black

3. The second spectrum colour is ....

a. red. b. orange. c. violet. d. green.

4. If you put an object at a distance of 20 cm. in front of the mirror, the distance between the image and the mirror equals .... cm.

a. 10 b. 40 c. 60 d. 20

5. A rainbow is formed when ....

a. sunlight passes from the drops of rain water to air, then its splitting into seven spectrum colours.

b. sunlight passes from air to water, then its splitting into seven colours.

c. sunlight doesn't pass through any medium.

d. sunlight passes through glass.

4 **(A) Put (✓) or (✗), then correct the wrong ones:** *(5 marks)*

1. Violet is the last colour in the spectrum colours. ( )

....

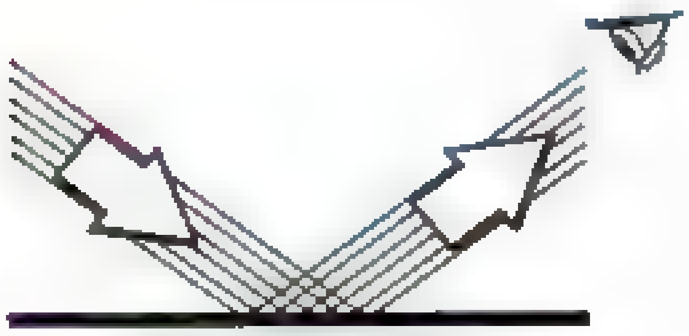
2. In the irregular reflection, the light rays are reflected directly in one direction. ( )

....

3. The change in the direction of light rays when they transfer through two different transparent media is called light reflection. ( )

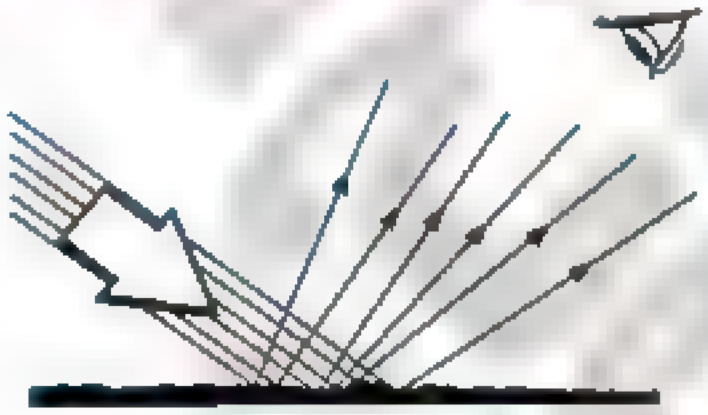
....

(B) Look at the following figures, then complete the following:



Smooth surface

Fig (a)



Rough surface

Fig (b)

1. The two figures represent the .... of light.
2. In fig.(a), the light rays are reflected in one direction, so this is a .... of light.
3. In fig.(b), the light rays are reflected in different directions, so this is an .... of light.

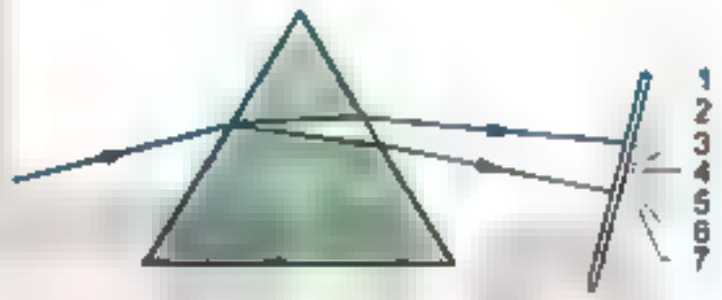
1 Part

5 (A) Write the scientific term: *(5 marks)*

1. It is the separation of white light into seven colours called spectrum colours. (. . ...)
2. The change in the direction of light when it passes through two different transparent media. (. ...)
3. A beautiful phenomenon occurs in the sky during raining in a sunny day. (. ... .)

(B) Look at the opposite figure which represents the glass prism , then complete the labels:

1. ....
2. Orange.
3. . .. ..
4. ..
5. ...
6.
7.



Unit 1 Lesson 2

25

Test yourself (3)

Answer each of the following questions :

1 Complete the following statements: *(5 marks)*

1. Mixing the seven spectrum light colours produces the ..... .
2. ..... objects seem having the same colour of the reflected light.
3. The strawberry fruit seems red, because it reflects ..... only.
4. When white light strikes ..... , it reflects all light colours, while when it falls on ..... , it absorbs all light colours.
5. When white light strikes a banana fruit, it absorbs all light colours and ..... the ..... light only.
6. When white light falls on a blue translucent cup, the cup absorbs all light colours except .....
7. ..... reflects its own colour only, while ..... allows its own colour only to pass through it.

---

2 (A) Give reasons for each of the following: *(5 marks)*

1. We must wear white clothes in summer season.

.....

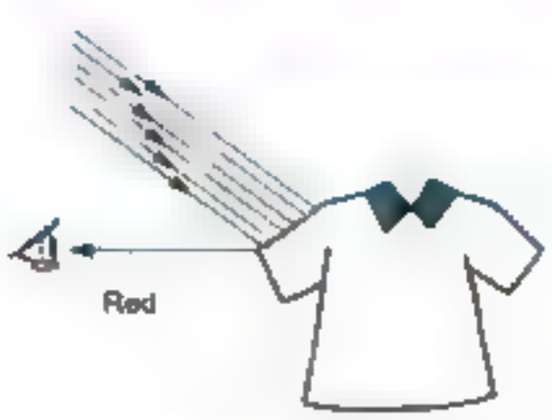
2. The coloured transparent and translucent objects seem with the colour of the transmitted light through them.

.....

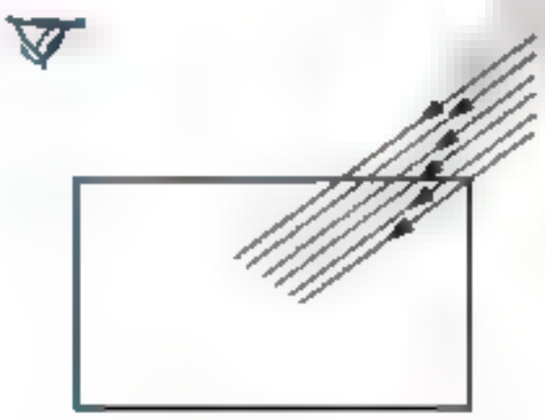
3. We see the white object as it is.

.....

(B) What is the colour of the body in each case?



(1) .....



(2) .....

1 Part

3 Write the scientific term for each of the following: *(5 marks)*

1. It is used to separate the visible light into seven spectrum colours. (.....)
2. The objects that reflect all light colours that fall on them. (.....)
3. The seven colours of light, where sunlight is made up of. (.....)
4. The object that absorbs all the colours of light and permits its own colour only to pass through. (.....)
5. The object that absorbs all light colours and reflects its own colour only. (.....)

4 (A) Put (✓) or (✗) : *(5 marks)*

1. We see the coloured transparent body with the same colour, beacause it reflects all the light colours. ( )
   .....
2. The black opaque objects absorb all light colours and reflect their own colour only. ( )
   .....
3. The greeen table reflects all light colours. ( )
   .....

(B) What will happen when ... ?

1. White light strikes a strawberry fruit.
   .....
2. Yellow light strikes a black object. Why ?
   .....

5 Choose the correct answer : *(5 marks)*

1. When sunlight strikes a blue transparent glass sheet, the sheet appears .....
   a. yellow. b. black. c. red. d. blue.
2. The green glass bottle ..... when white light falls on it.
   a. reflects all light colours
   b. absorbs all light colours and allows the green colour only to pass through
   c. absorbs all light colours d. reflects the green colour only
3. ..... reflects all light colours.
   a. White opaque object b. Black opaque object
   c. Yellow opaque object d. Transparent object
4. The flower seems red, because it absorbs ..... .
   a. all light colours and reflects the red colour only.
   b. the red colour only. c. all light colours.
   d. red and green colours.
5. Transparent and translucent objects have the same colour of .....
   a. the absorbed light colour. b. the transmitted light colour.
   c. the reflected light colour. d. the refracted light colour.

Unit 1 Lesson 2

25

Test yourself (4)

Answer each of the following questions :

1 Look at the following figures, then write your observation and your inference: *(5 marks)*

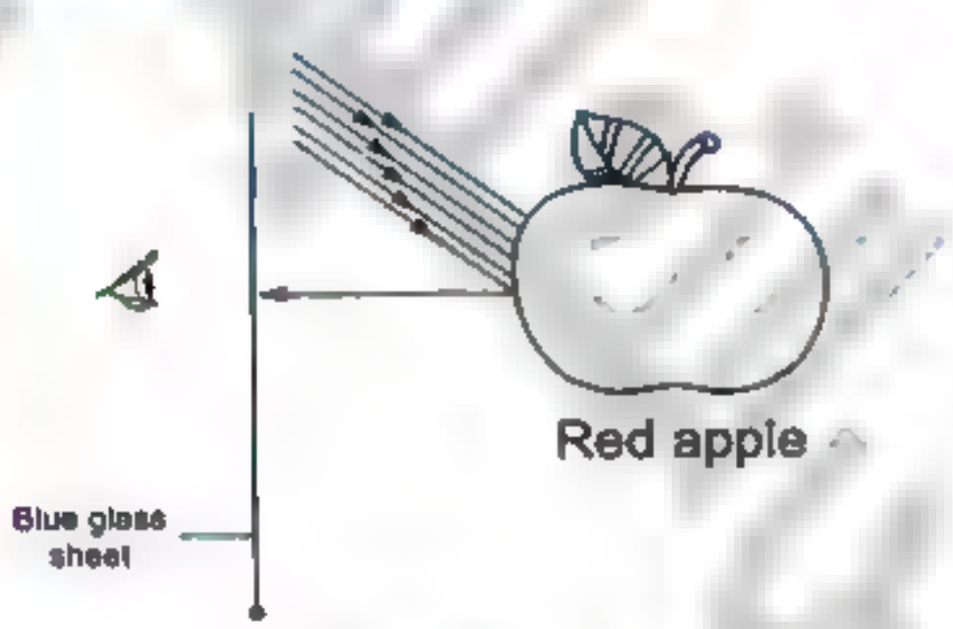


Fig.(a)

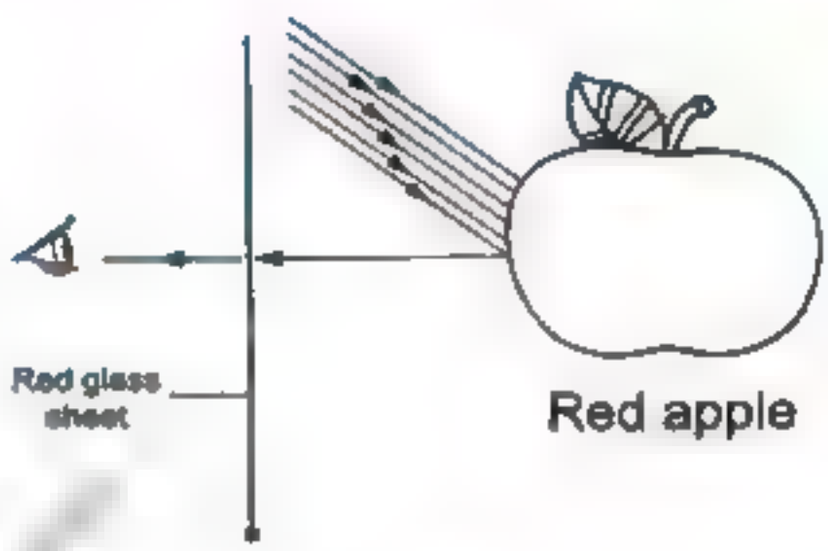


Fig.(b)

⇒ Observation on fig. (a) : .....

⇒ Observation on fig. (b) : .....

⇒ Inference : .....

.....

2 Complete the following statements : *(5 marks)*

1. ..... and ..... are the primary coloured lights.
2. ..... and ..... are the secondary coloured lights.
3. Mixing ..... and ..... lights produces magenta light.
4. The red T-shirt seems red when you look at it from ..... coloured glass sheet and it seems ..... when you look at it from a violet glass sheet.

3 (A) Give reasons for each of the following: *(5 marks)*

1. Yellow, magenta and cyan are called secondary coloured lights.

   .....

2. Green colour is a primary coloured light.

   .....

3. The yellow banana appears black if you see it through a green transparent glass sheet.

   .....

   .....

1 Part

(B) What happens when ... ?

1. Mixing blue and green light colours.

.....

2. Mixing all the primary light colours.

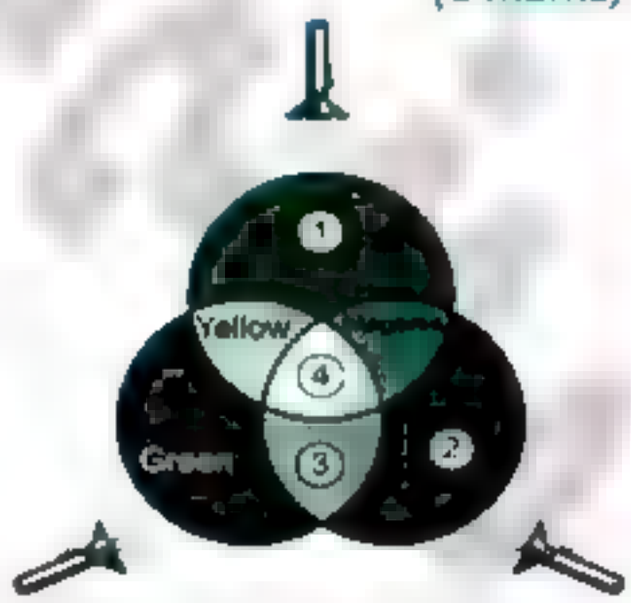
.....

4 Choose the correct answer: *(5 marks)*

1. All the following coloured lights are primary lights except .....
   a. yellow. b. green. c. red. d. blue.
2. ..... are coloured lights which impossible to be produced by mixing two of the other coloured lights.
   a. Secondary coloured lights b. Primary coloured lights
   c. Yellow and green d. Green and magenta
3. Mixing ..... lights produces magenta light.
   a. red and green b. red and blue c. blue and green d. red and yellow
4. When you look at a red apple from a yellow glass sheet, the apple seems .....
   a. black. b. red. c. blue. d. yellow.
5. Which of the primary colours are mixed to produce yellow colour ?
   a. Red and green. b. Red and blue. c. Blue and green. d. Blue and cyan.

5 (A) Look at the opposite figure, then complete: *(5 marks)*

1. The three torches represent .....
2. Write the colour of each of the following number :
   ① ..... ② .....
   ③ ..... ④ .....



(B) Write the scientific term:

1. The light that is produced by mixing red, blue and green coloured lights.
   (.....)
2. The coloured light that we can get by mixing two of the primary coloured lights.
   (.....)

Unit 1 Lessons 1 & 2

25

Test yourself (5)

Answer each of the following questions :

1 Choose the correct answer : *(5 marks)*

1. The whiteboard ..... when white light falls on it.
   a. absorbs all light colours b. reflects all light colours
   c. refracts all light colours d. absorbs all light colours except blue
2. The ... . object to the light source has the bigger shadow.
   a. farther b. nearer c. (a) and (b) d. no correct answer
3. Mixing red and blue lights gives ..... light.
   a. yellow b. cyan c. magenta d. green
4. When you look in a mirror, you can see your image due to .. .. of light.
   a. regular refraction b. irregular refraction
   c. irregular reflection d. regular reflection
5. The blue transparent ruler appears .. .. when white light falls on it.
   a. black b. white c. blue d. cyan

2 (A) Give reasons for each of the following: *(5 marks)*

1. You can't see your pen if it is put behind your book.

   ....

2. When you look at an orange through a green glass sheet, the orange seems black.

   . ...

   ....

3. Sunlight can be separated.

   . ...

(B) Look at the opposite figure, then answer :

1. What is your observation ?

   . ...

2. What is your inference ?

   .. ..

1 Part

3 Complete the following statements : *(5 marks)*

1. Yellow light is formed by mixing ..... and ..... light colours.
2. ..... appears in the sky during rainfall due to ..... of the Sunlight into seven spectrum colours.
3. Opaque objects have the same colour of the light that they .....
4. The light ..... when it transfers between two ..... transparent media.
5. The spectrum colour which comes before indigo is ..... .
6. A red apple appears ..... through a red glass sheet, while it appears ..... through a green glass sheet.

---

4 (A) Put (✓) or (✗) , then correct the wrong ones: *(5 marks)*

1. Regular reflection is formed when light falls on a rough surface. ( )

   .....

2. Mixing red, green and yellow light colours produces the white light. ( )

   .....

3. Frosted glass is a transparent material. ( )

   .....

(B) Write the scientific term :

1. Reflect of light on the surface of a white paper in different directions.

   (.....)

2. Material through which you cannot see objects. (.....)

---

5 (A) What happens when ... ? *(5 marks)*

1. Putting a spoon in a glass of water.

   .....

2. Sunlight strickes a black T-shirt.

   .....

3. You place a transparent object between a source of light and a screen.

   .....

(B) Cross out the odd word :

1. Red - Yellow - Green - Blue. (.....)
2. Clear glass - Clear water - Frosted glass - Transparent plastic.

   (.....)

Unit 1 Lesson 3

25

Test yourself 6

Answer each of the following questions :

1 Complete the following statements: *(5 marks)*

1. The ancient Greeks discover black rocks in an area named ..... , where these rocks attract materials made of .....
2. Magnetite is the ..... magnet, while bar magnet is the ..... magnet.
3. ..... of magnet always points to the north direction of the Earth, but ..... pole always points to the south direction of the Earth.
4. Aluminium, chalk and wood are ..... , while nickel and cobalt are .....
5. Magnetism is concentrated at the ..... , while it disappears at the ..... of magnet.

---

2 (A) Give reasons for: *(5 marks)*

1. One of the magnetic poles is called north pole and the other is called south pole.

.....

.....

2. Iron is considered a magnetic substance.

.....

(B) Mention the properties of magnet:

.....

.....

.....

.....

---

3 Choose the correct answer: *(5 marks)*

1. The natural magnet is one of the ..... ores.

a. copper b. iron c. aluminium d. carbon

2. When a magnet is suspended freely, its north pole is directed towards ..... direction.

a. north b. south c. east d. west

3. ..... is attracted to the magnet.

a. Chalk b. Glass c. Cobalt d. Plastic

1 Part

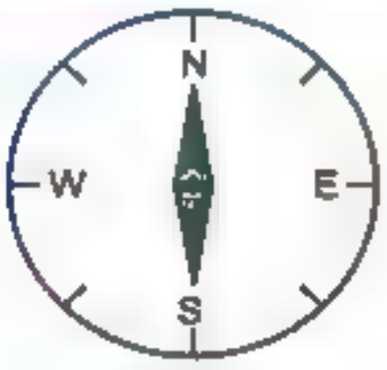
4. The region(s) of the magnet at which the magnetic force increases is (are) the .... of the magnet.
   a. midpoint b. two halves c. two poles d. (a) , (b) and (c)
5. The magnet is surrounded by an area called .....
   a. magnetic poles. b. magnetic field.
   c. non-magnetic materials. d. no correct answer.

---

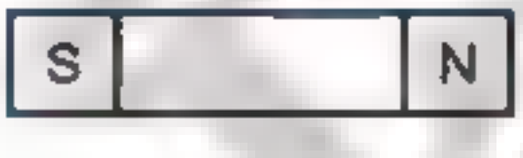
4 **(A) Put (✓) or (✗) , then correct the wrong ones:** *(5 marks)*

1. Aluminium is attracted to the magnet. ( )
2. The magnet has three poles. ( )
3. The natural magnet is a black rock. ( )
4. The south pole is usually blue-coloured, while the north pole is red-coloured. ( )

(B) What is the name of the following magnets ?



a. .....



b. .....

---

5 **(A) When Ahmed approaches a strong magnet to samples of iron nails, small pieces of wood, nickel, plastic, cobalt and aluminium. He noticed that the iron nails and some other small pieces are attracted to the magnet, while the other pieces are not.** *(5 marks)*

Classify these samples into magnetic and non-magnetic materials :

Magnetic materials	Non-magnetic materials
.....	.....
.....	.....
.....	.....

(B) Cross out the odd word and give reason for your choice :

(Iron nails - Steel paper clips - Chalk - Cobalt)

- The odd word is .....
- Because .....

Unit 1 Lesson 3

25

Test yourself

Answer each of the following questions :

1 (A) Write the scientific term for each of the following: *(5 marks)*

1. The pole of the magnet that repels with the north pole of another magnet.
(.....)
2. The space around the magnet in which the effect of magnetic force appears.
(.....)

(B) What happens when ... ?

1. Passing a needle magnet through a piece of cork, then put it in a basin containing water.
.....
2. You approach the north pole of a magnet to the south pole of another magnet.
.....
3. You sprinkle some iron filings on the glass sheet which is put on a strong magnet, then knock on the glass slightly.
.....

2 Complete the following statements : *(5 marks)*

1. Like magnetic poles ..... each other, whereas dislike magnetic poles ..... each other.
2. ..... contains a small light magnet that moves freely around a .....
3. The English scientist ..... made a magnetized needle which is used nowadays in making .....
4. Materials that are attracted to the magnet are called .....
5. ..... is the ability of the magnet to attract ..... materials existed in its field.
6. The greatest magnetic force is concentrated at ..... of magnet.

3 (A) Give reasons for : *(5 marks)*

1. The compass is used to locate the main four geographical directions.
.....

1 Part

2. The north pole of the magnet attracts the south pole of another magnet, but repels the north pole.

.....

.....

3. The compass is an important tool for travellers.

.....

(B) Put (✓) or (✗), then correct the incorrect ones:

1 The south pole of the compass always points to the west direction of the Earth. ( )

.....

2. One of the applications of using the magnet in our daily life is the compass. ( )

.....

---

4 (A) Choose the correct answer: *(5 marks)*

1. The compass contains ..... magnet.

a. horse-shoe b. bar

c. small light magnetic needle d. ring

2. All the following are non-magnetic materials except .....

a. copper. b. cobalt. c. aluminium. d. plastic.

(B) What is meant by magnetic force ?

.....

.....

---

5 (A) Compare between magnetic and non-magnetic materials. *(5 marks)*

.....

.....

.....

(B) What are the composition (structure) and usage of compass ?

.....

.....

.....

Unit 1 Lessons 1, 2 & 3

25

Test yourself 8

Answer each of the following questions :

1 Complete the following statements: *(5 marks)*

1. ..... and ..... are non-magnetic materials.
2. The image formed through narrow holes of the camera is ..... and .....
3. Light can pass through ..... and ..... materials.
4. The like magnetic poles ..... , while the ..... ones attract.
5. When light passes from water to air, it .....
6. When the magnet is hanged freely, it takes ..... direction.

---

2 (A) What happens when ... ? *(5 marks)*

1. You put some iron nails close to the middle of the magnet.

   .....

2. Light falls on a shiny surface.

   .....

(B) Wrtie the scientific term :

1. Materials as iron, cobalt and nickel. (.....)
2. The materials which allow the objects to be seen less clear behind them. (.....)
3. A set consists of a mangnetic needle that can spin freely around a fixed axis. (.....)

---

3 Choose the correct answer: *(5 marks)*

1. Shadow is a ..... area that is formed, because light travels in straight lines.

   a. coloured b. white c. darkened d. yellow

2. The natural magnet is a ..... rock.

   a. red b. blue c. green d. black

3. The glass prism is used to separate the white light into seven light colours called .....

   a. secondary colours. b. primary colours.

   c. spectrum colours. d. (a) and (b).

1 Part

4. The ... pole of the magnet always refers to the south direction of the Earth.
a. north b. east c. west d. south

5. ... is the main source of light.
a. The Sun b. Lightened candle
c. Kerosene lamp d. Lightened electric lamp

4 (A) Give reasons for each of the following : *(5 marks)*

1. Formation of shadow.
.....

2. It is preferable to wear white clothes in summer.
.....

3. Some materials are called magnetic materials.
.....

(B) Correct the underlined words :

1. The magnet has **three** poles. (.....)
2. When the white light strikes a red rose, it reflects the **white** colour.
(.....)

5 (A) Choose from column (B) what suits it in column (A) : *(5 marks)*

(A)	(B)
1. Consists of seven spectrum colours	a. secondary coloured lights.
2. Red, green and blue	b. yellow colour is produced.
3. On mixing red and green	c. white light.
4. Yellow, magenta and cyan	d. primary coloured lights.
	e. magenta colour is produced.

1. ..... 2. ..... 3. ..... 4. .....

(B) Mention the function of :

1. The compass :
.....

2. The glass prism :
.....

Unit 1 Lesson 4

25

Test yourself 9

Answer each of the following questions :

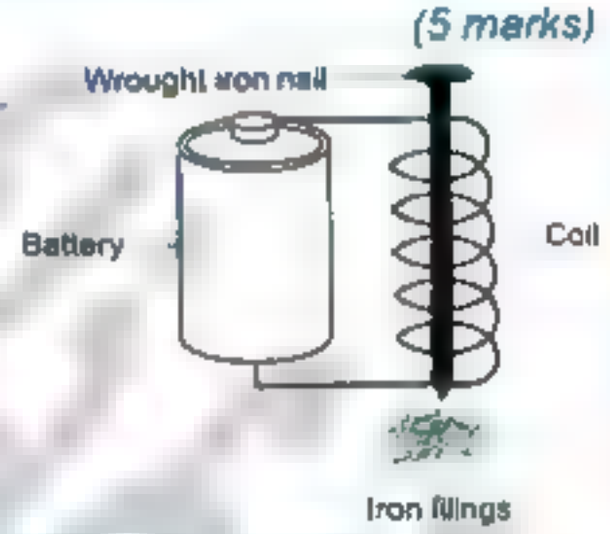
1 Complete the following statements: *(5 marks)*

1. Generating the magnetic field by using the electric current is the idea of making .....
2. When you put an insulated wire connected with a battery beside a compass, the compass needle .....
3. ..... is the magnet which is made by the effect of the electric current.
4. When an electric current flows through a wire twisted around a wrought iron bar, the bar becomes .....
5. In the electromagnet, ... energy changes into ..... energy.
6. ..... and ..... are from the applications, where the electromagnet is used.
7. ..... and ..... increase the magnetic force of the electromagnet.

---

2 (A) Look at this figure, then mention your observation and your conclusion: *(5 marks)*

1. Observation : .....
2. Conclusion : .....



(B) Mention some of the devices in which the electromagnet can be used:

.....

---

3 (A) Give reasons for: *(5 marks)*

1. It is preferable to increase the number of coil turns in the electromagnet.

.....

2. The electromagnet is a very important device.

.....

3. When an electric current flows through a wire that is put beside a compass, the compass needle deflects.

.....

1 Part

(B) How is the electromagnet used in lifting the heavy iron blocks ?

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

---

4 (A) Write the scientific term: *(5 marks)*

1. A structure made of a copper wire twisted around a wrought iron bar and the wire is connected to a battery. (. . . . .)
2. A device used to detect the magnetic effect of the electric current (. . . . .)
3. A device used to convert the electric energy into magnetic energy. (. . . . .)
4. A huge instrument contains electromagnet and is used to lift scrap cars. (. . . . .)

(B) Mention the factors that increase the magnetic force of the electromagnet:

. . . . . .

. . . . . .

---

5 (A) Put (✓) or (✗) , then correct the wrong ones: *(5 marks)*

1. The magnetic energy can be generated by the electric current ( )

. . . . . .

2. Magnetism is always related to electricity. ( )

. . . . . .

3. The magnetic force of the electromagnet increases by decreasing the number of batteries. ( )

. . . . . .

(B) What happens if ... ?

1. The electric current flows through a coil winded around a wrought iron nail, then put this nail close to paper clips.

. . . . . .

2. You cut the electric current from the electromagnet.

. . . . . .

Unit 1 Lesson 4

25

Test yourself 10

Answer each of the following questions :

1 Choose the correct answer: *(5 marks)*

1. Dynamo changes the ... .
   a. kinetic energy into magnetic energy.
   b. electric energy into magnetic energy.
   c. mechanical energy into electric energy.
   d. electric energy into mechanical energy.
2. The huge electric generator is used to .....
   a. generate electricity used for lightening cities.
   b. generate electricity used for operating factories.
   c. generate heat.
   d. (a) and (b).
3. The coil of a dynamo is made up of ..... wire.
   a. carbon b. copper c. sulphur d. iron
4. ... ... discovers that "by moving a magnet in a coil, electric energy is generated".
   a. Faraday b. Newton
   c. El-Hassan Ibn El-Haitham d. Mosely
5. ... ... consists of a copper coil and a magnet.
   a. Horse-shoe magnet b. Dynamo
   c. Electromagnet d. Magnetic needle

---

2 (A) What happens when moving a copper wire between two poles of magnet ? *(5 marks)*

.....

(B) Write one use for each of the following :

1. Electromagnet:

.....

Part 1

2. Dynamo:

.....

(A) Give reasons for each of the following: *(5 marks)*

1. Dynamo changes the kinetic energy into electric energy.

.....

2. The deflection of the ammeter's pointer increases by increasing the motion of coil between the two poles of magnet.

.....

3. The huge electric generator is used in electric power stations.

.....

(B) Mention the methods to increase the produced amount of electricity from the dynamo.

.....

Complete the following statements: *(5 marks)*

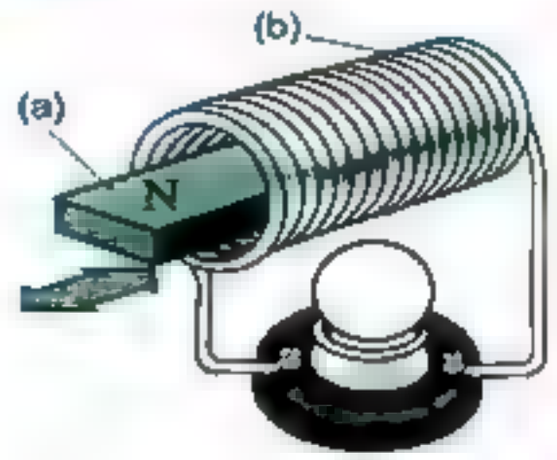
1. ..... and ..... are examples of dynamo.
2. Moving a coil between the two poles of U-shaped magnet produces .....
3. The basic idea of the electric generator is changing of ..... into .....
4. The electric current produced by the electric generator increases by ..... or .....
5. The small dynamo of the bicycle consists of a ..... connected with a magnet that is surrounded by .....
6. The magnet has ..... effect.

(A) Compare between natural magnet and electromagnet. *(5 marks)*

.....

Test yourself

(B) Look at the opposite figure, then answer the following:



1. Moving (a) inside (b) produces .....
2. This figure represents the idea of making .....
3. In this figure, the ..... energy changes into ..... energy.
4. When the number of turns increases in (b), and (a) becomes huge, a large amount of ..... is produced so, this structure is used in .....

General Exercise of the School Book on Unit 1

1 **Use the following words to complete the sentences below :**

poles - repel - attract - Unlike - magnetic field - compass - electromagnet - electric generator - motor - angle of incidence - angle of reflection.

1. The ..... has a small light magnet moves freely around a fixed axis.
2. The ..... is the space surrounding a magnet in which the magnetic force appears through.
3. The magnetic force is most powerful at the ..... of the magnet.
4. Like poles ..... each other.
5. ..... poles attract.
6. When an electric current travels through a wire twisted around a wrought iron nail, the nail becomes an .....
7. A set that changes the mechanical energy into electrical one is known as an .....

---

2 **Write the scientific term of each of the following sentences :**

1. Reflection of light on the surface of white paper in different directions.
(.....)
2. The materials that don't allow light to transmit through and objects can't be seen through. (.....)
3. The change of light rays directions when they transmit through the separating surface between two different transparent media. (.....)
4. The seven colours which the white light is made up of. (.....)
5. Red, green and blue light colours. (.....)
6. Yellow, purple and cyan light colours. (.....)
7. The materials that get attracted to the magnet. (.....)
8. The two ends of the magnet where the magnetic force is most powerful.
(.....)
9. A set is used to change the mechanical energy to the electric one.
(.....)

Test yourself

3 Put (✓) or (✗) and correct the wrong ones :

1. Light is a form of energy. ( )

2. A rainbow is formed when the Sun separates the moonlight. ( )

3. Light transmits in straight lines. ( )

4. Transparent objects have the same colour of the light that doesn't travel through. ( )

5. Opaque objects have the same colour of the light which the object reflects. ( )

6. Cyan, magenta and yellow are the primary colours. ( )

7. Mixing red, green and blue colours produces the white colour. ( )

8. Aluminium gets attracted to the magnet. ( )

9. An electric current can be generated by using a magnet. ( )

10. Magnetism is always related to electricity. ( )

11. An electromagnet is formed when an electric current passes through a compass. ( )

Model Exam (1) on Unit 1

25

Answer each of the following questions :

1 Choose the correct answer: *(5 marks)*

1. The ability of the magnet to attract the magnetic materials existed in its field is .....
   a. magnetic field. b. magnetic materials.
   c. non-magnetic materials. d. magnetic force.
2. The coloured opaque object seems with ..... when we see it through transparent objects.
   a. the same colour b. black colour
   c. yellow colour d. the colour of the absorbed light
3. The electromagnet consists of .....
   a. wrought iron. b. copper wire.
   c. dynamo. d. (a) , (b) and battery.
4. The bouncing of light after falling on a piece of paper is .....
   a. a regular reflection. b. an irregular reflection.
   c. light refraction. d. light separation.
5. In an activity to prove that electric energy is generated by using a magnetic energy, the deflection of pointer of ammeter increases due to .....
   a. passing less electric current. b. passing more electric current.
   c. passing more light. d. passing less light.

---

2 Write the scientific term: *(5 marks)*

1. The materials which allow most light to pass through and objects can be seen clearly through them. (.....)
2. Materials as copper, wood, leather and plastic. (.....)
3. A device used in picking up steel blocks when the electric current passes through its coil and loses its magnetic force by cutting the electric current. (.....)

Test yourself

4. A phenomenon appears in the sky during the rainfalling, and consists of different colours. (.....)

5. An object which reflects all light colours. (.....)

3 (A) Give reasons for each of the following: *(5 marks)*

1. We must wear dark clothes in winter.

.....

2. When you approach a magnet to some paper clips, the clips are attracted to the two poles of the magnet.

.....

3. The deviation of the ammeter's pointer when moving the copper wire between the two poles of a magnet.

.....

(B) Mention how yellow, magenta and cyan are produced:

.....

4 (A) Look at the following figures which represent three magnets, then complete the following questions : *(5 marks)*

Fig. (a)

Fig. (b)

Fig. (c)

1. Magnets in figures (a) and (b), ... each other.
2. Magnets in figures (b) and (c), ... each other.
3. From the previous sentences, the ..... poles repel, while ..... poles attract.

(B) Put (✓) or (✗) :

1. The magnetic force is a visible force. ( )
2. When the white light strikes a violet rose, the rose reflects the white colour. ( )

1 Part

5 (A) Complete the following sentences : *(5 marks)*

1. Light can easily be transmitted through ..... and ..... materials.
2. As the light falls on the green grass, the grass must absorb all light colours except ..... .
3. The like poles ..... each other, whereas the dislike poles ..... each other.

(B) Amir wanted to increase the power of an electromagnet that he made. Which of the following achieves his aim ? .....

a. Replacing the copper insulated wire with another thinner and longer one.
b. Replacing the wrought iron nail with another one made of copper.
c. Replacing the wrought iron nail with another one made of steel.
d. Increasing the number of turns in the coil and the number of batteries.

Model Exam 2 on Unit 1

25

Answer each of the following questions :

1 Complete the following sentences : *(5 marks)*

1. Dynamo changes the ..... energy into .. .. energy.
2. Mixing .... and .... coloured lights gives yellow colour.
3. The nearer object to the light source has the .. .. shadow.
4. Materials can be divided into ..... and .. .. due to their magnetic abilities.
5. If the red light strikes a white ball, the ball looks in .... colour.
6. Sunlight is separated into .... colours by passing it through a ....

---

2 (A) Put (✓) or (✗) : *(5 marks)*

1. Image can be seen clearly behind carton. ( )
2. An electric current can be generated by using a magnet. ( )
3. Coloured opaque objects reflect their own colour only. ( )
4. Aluminium is attracted to the magnet. ( )

(B) What happens when ... ?

1. Seven spectrum light colours are mixed together.

.....

2. A strong magnet is put close to a piece of wood.

.....

3. Increasing the motion of coil between the two poles of a magnet in the dynamo.

.....

---

3 Write the scientific term : *(5 marks)*

1. The lights that cannot be produced by mixing two other coloured lights.

(.....)

2. An instrument that is used to generate large amounts of electricity to lighten the cities and operate factories.

(.....)

31

1 Part

3. It is the light energy that can be seen. (.....)

4. The regions of the magnet, where the magnetic force is most powerful.

(.....)

5. A set that is used for locating the main four geographical directions.

(.....)

4 (A) Give reasons for each of the following : *(5 marks)*

1. The box of compass isn't made from iron.

.....

2. The magnet which is made by electricity is called electromagnet.

.....

3. The formation of images through narrow holes.

.....

(B) Correct the underlined words :

1. Disc drive and electric mixer contain **dynamo**. (.....)
2. The object seems black as it **reflects** all the light colours. (.....)

5 (A) Choose the correct answer : *(5 marks)*

1. We can see objects due to ..... of light on them.

a. reflection b. refraction

c. shadow d. spectrum colours

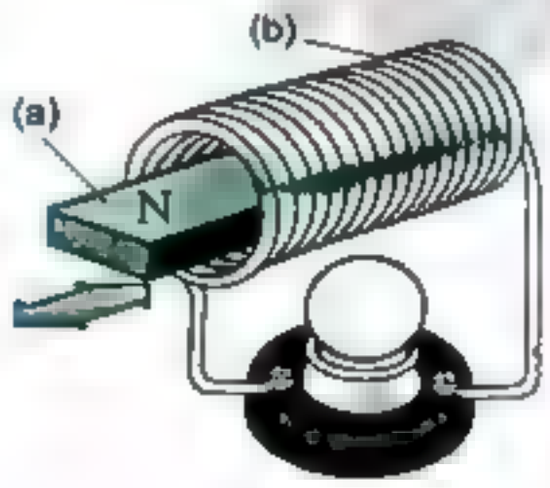
2. When the magnet is hanged freely, it will take ..... direction.

a. north-west b. north-east c. north-south d. east-south

3. An orange appears ..... when you look at it through a blue transparent glass sheet.

a. red b. yellow c. green d. black

(B) From the opposite figure, answer the following :



1. Write the name of parts (a) , (b) :

(a) ..... (b) .....

2. Complete : When we move (a) inside (b),

an ..... is generated in the twisted wire,

and ..... the small light bulb.

Unit 2 Lesson 1

25

Test yourself 11

Answer each of the following questions :

1 Complete the following statements: *(5 marks)*

1. A substance that consists of only one type of identical particles is called ..... .
2. ..... is a mixture of water and some minerals such as calcium and .....
3. ..... is used to separate a soluble salt from its solution.
4. Components of a mixture can be separated by ....., ..., ... or evaporation process.
5. ..... is used to separate water-oil mixture.
6. Solid materials can be mixed by ..... or .....

---

2 (A) Write the scientific term: *(5 marks)*

1. A substance that consists of more than one type of particles. (.....)
2. A method used to separate iron objects from other solid substances in a mixture. (.....)
3. A process used to obtain table salt from its solution. (.....)

(B) Put (✓) or (✗), then correct the wrong ones:

1. Mixtures are formed by shaking, stirring or grinding. ( )

.....

2. We use magnetic attraction to separate mixtures which contain precipitates. ( )

.....

---

3 (A) Give reasons for each of the following: *(5 marks)*

1. Air is considered a mixture.

.....

2. Both sugar and distilled water are considered pure substances.

.....

(B) Mention the steps that used to separate the components of a mixture of sand, salt and iron filings:

1. .... 2. ....

3. .... 4. ....

4 (A) Complete the following table: *(5 marks)*

Substance	Its type (mixture/pure substance)	Its components
1. Salty water.	....	....
2.	....	Water, calcium and magnesium.
3.	Pure substance.	Sodium chloride only.

(B) Examine the opposite figure, then complete the following :

1. The opposite apparatus is known as ....
2. This apparatus can be used to separate unmixed liquids such as .... mixture.
3. We can use this apparatus , ... , ... or .... to separate the components of mixtures.

5 (A) Mention one use for each of the following : *(5 marks)*

1. Stirring:

....

2. Filter paper :

....

(B) What happens when ... ?

1. Mix an amount of oil with water.

....

2. An amount of distilled water evaporates.

....

Unit 2 Lesson 2

25

Test yourself 12

Answer each of the following questions :

1 Complete the following: *(5 marks)*

1. ..... + ... $\xrightarrow[\text{process}]{\text{.....}}$ Solution.
2. Mixtures formed by dissolving in liquids are ..... mixtures.
3. The mixture of mud with water can be considered as .....
4. In chocolate milk solution, ... is the solute and ..... is the solvent.
5. ..... and ..... increase the solubility speed.
6. ..... is the liquid in which the solid substance dissolves.

---

2 (A) Write the scientific term for each of the following: *(5 marks)*

1. The substance that presents in the solution in a great amount.
(.....)
2. The process of dissolving a solute in a solvent. (.....)
3. The mixture in which the particles of solute are suspended in the solvent.
(.....)

(B) Mention the factors affecting the solubility process:

1. .....
2. .....
3. .....
4. .....
5. .....

---

3 (A) Choose the correct answer: *(5 marks)*

1. As ..... decreases, the solubility time decreases.
   a. the amount of solvent b. the amount of solute
   c. heating d. stirring

1 Part

2. ..... is considered the most common solvent.

a. Benzene b. Vinegar c. Water d. Oil

3. Sugary solution is considered ..... mixture.

a. a homogeneous b. a heterogeneous

c. a complex d. no correct answer

(B) Give reasons for each of the following:

1. Dissolving 50 gm. of sugar in one liter of water is faster than in half liter.

.....

2. Solubility process depends on the temperature of the solution.

.....

---

4 (A) Put (✓) or (✗), then correct the wrong ones : *(5 marks)*

1. Stirring increases the time of solubility. ( )

.....

2. The mixture of sand and water is a homogeneous solution. ( )

.....

3. In the homogeneous mixture, you can't distinguish between its components. ( )

.....

(B) What is meant by ... ?

1. Solution : .....

.....

2. Solvent : .....

.....

Test yourself

5 (A) Which of the following processes takes shorter time and why ? *(5 marks)*

1. Dissolving 10 gm. of baking soda in 100 ml. of water

Or : Dissolving 20 gm. in the same amount of water.

.....

Because : .....

.....

2. Dissolving 30 gm. of sugar in 1 liter of water with stirring

Or : Dissolving the same amount of sugar in the same amount of water without stirring.

.....

Because: .....

.....

(B) Look at the opposite figure, then answer:

1. This figure represents the effect of ..... on the ..... process.
2. As this factor increases, the solubility time .....

General Exercise of the School Book on Unit 2

1 Explain the following concepts :

1. The mixture.

2. The solution.

3. Solubility process.

2 Mention 3 mixtures:

3 Put (✓) in front of the correct statement and (✗) in front of the incrorrect one, then correct the underlined words if they are incorrect :

1. The components of **mixtures** can be separated. ( )

2. Solubility speed **decreases** by shaking and rising the temperature. ( )

3. The solubility speed of solids **increases** by grinding. ( )

4. Increasing the amount of the solvent **decreases** the speed of solubility. ( )

5. Mixtures **can be** separated by the magnetic attraction, filtration and evaporation. ( )

Test yourself

6. Separating funnel is used to separate the **heterogeneous liquid mixture**. ( )

4 Which of the following processes takes place faster and why ?

1. Evaporation of an amount of sea water by leaving it in a beaker in sunlight for several days or heating the same amount on the burner.

2. Grinding of solids before adding them to a liquid to dissolve or breaking them down into small pieces.

3. Dissolving of sugar grains in water or sugar cubes in water.

4. Dissolving of an amount of salt in a beaker containing 100 ml. of water or the same amount of salt in 300 ml. of water.

5 State the solvent and solute in each of :

Solution	Solute	Solvent
1. Sugary solution.		
2. Salty solution.		

6 Show how can the following mixtures be spearated :

1. Water contains mud.

2. Water contains sand.

1 Part

3. Salty solution.

.....

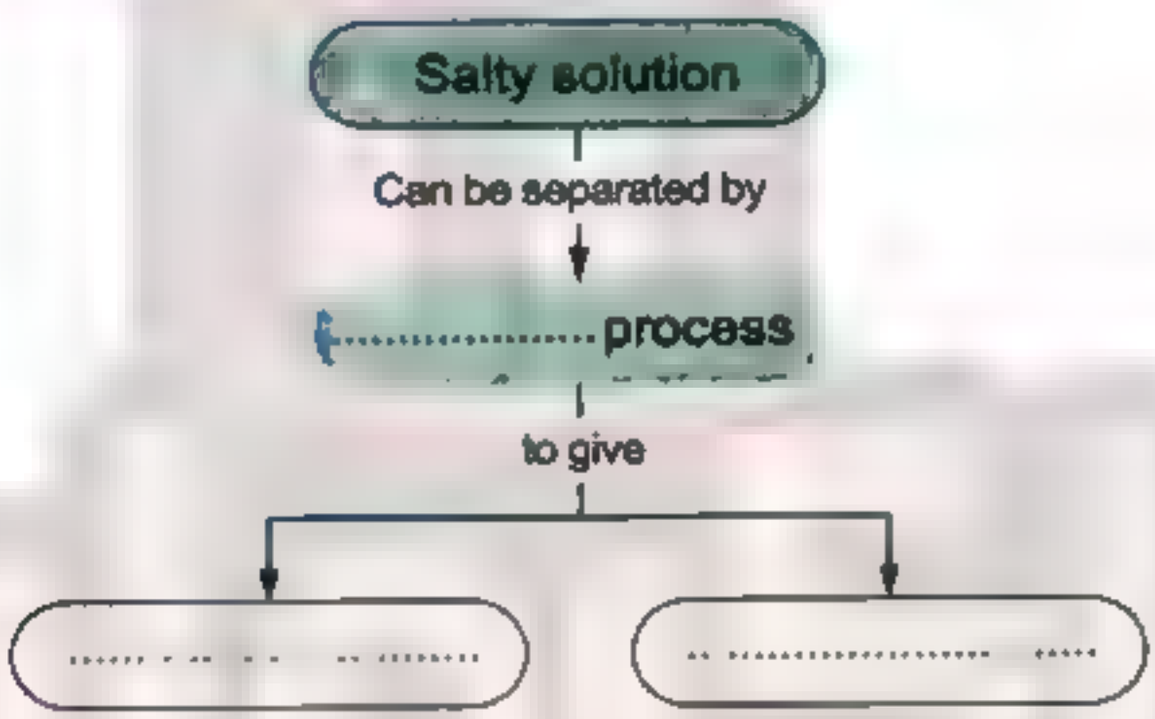
.....

4. Sugary solution.

.....

.....

7 Complete the following concept map :



Model Exam 1 on Unit 2

25

Answer each of the following questions : *(5 marks)*

1 **(A) Sugar cubes and powdered sugar are added to same amount of water, then stirr as shown in the opposite figures :**

Which statement is true ?

a. Sugar cubes will dissolve faster.

b. Powdered sugar will dissolve faster.

c. Both of them will dissolve in the same amount of time.

- Give reason for your answer.

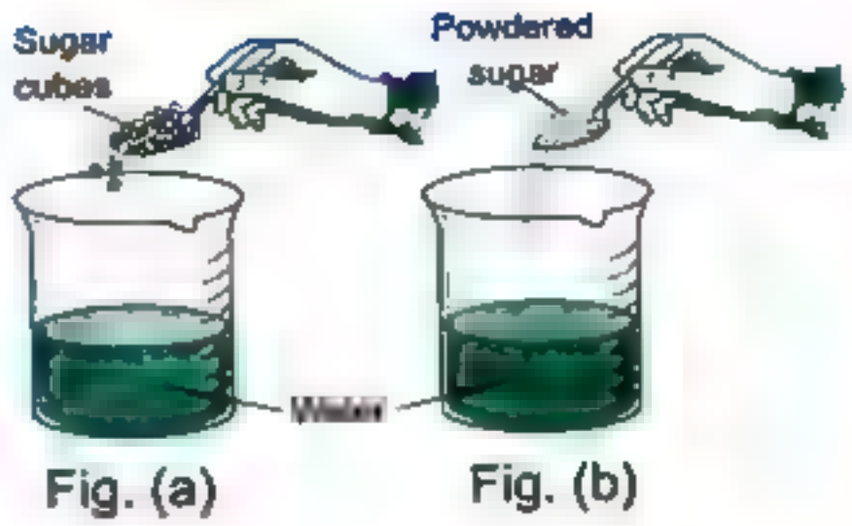


Fig. (a) Fig. (b)

.....

.....

(B) How can you separate a mixture of salt and iron filings ?

.....

.....

2 **Complete the following sentences :** *(5 marks)*

1. The components of ..... mixtures can be distinguished, while the components of ..... mixtures can't be.
2. A mixture of mango juice and milk can be formed by ..... or .....
3. ..... is an example of solid-solid mixture, while ..... is a gaseous-liquid mixture.
4. Stirring a mixture of water and sugar ..... while grinding the solid materials .....
5. Mixing a small amount of mud with water forms ..... that can be separated by .....

3 **(A) Give reasons for :** *(5 marks)*

1. Dissolving sugar in hot water is faster than that in cold water.

.....

2. Evaporation process is used to separate table salt from its solution.

.....

3. Solution is a type of mixtures.

.....

1 Part

(B) How can you separate coffee from water ?

.....

4 Choose the correct answer: *(5 marks)*

1. All these methods are used to form mixtures except .....
   a. shaking process. b. stirring process.
   c. grinding process. d. magnetic attraction.
2. Increasing the quantity of solute when using the same amount of solvent leads to .....
   a increasing the solubility time. b. increasing the solubility process.
   c. preventing the solubility process. d. no change in the solubility time.
3. To separate insoluble matter (sand) from salty solution, we use .....
   a. filtration process. b. evaporation process.
   c. separating funnel. d. grinding process.
4. All the following are pure substances except .....
   a. distilled water. b. sugar. c. baking soda. d. tomato sauce.
5. ..... is from liquid-liquid mixtures.
   a. A mixture of vinegar and water b. A mixture of sand and water
   c. A mixture of lettuce, carrots and tomatoes d. Air

5 (A) You have an amount of salt mixed with an amount of sand and an amount of water. Arrange the following steps to separate the components of this mixture: *(5 marks)*

Filtration
Fig. (1)


Stirring
Fig. (2)


Evaporation
Fig. (3)

.....

(B) From the previous figures, mention :

1. The solute and the solvent.

.....

2. The effect of the step in fig. (2) in solubility process.

.....

Model Exam 2 on Unit 2

25

Answer each of the following questions :

1 (A) Write the scientific term : *(5 marks)*

1. A process used to obtain sugar from sugary solution. (.....)
2. A mixture in which the solute breaks down into its most basic particles that spread throughout the solvent. (.....)
3. A mixture whose components can be distinguished from each other. (.....)

(B) Mention the method that is used to :

1. Separate salt from salt solution. (.....)
2. Separate sand from water. (.....)

---

2 Complete the following : *(5 marks)*

1. Air is a mixture of ..... , ... , water vapour and nitrogen.
2. Mineral water is a ..... which consists of water and minerals such as ..... and magnesium.
3. ..... process is used to separate sand from water.
4. The solution consists of ..... and ..... which are mixed by ..... process.
5. In salty solution, salt is the ..... , while water is the .....

---

3 Choose the correct answer: *(5 marks)*

1. To separate iron filings from sand, we must use .....
   a. a magnet. b. a separating funnel.
   c. evaporation process. d. filtration process.
2. All these methods are used to separate mixtures except .....
   a. magnetic attraction. b. filtration process.
   c. evaporation process. d. shaking process.
3. Oil-water mixture can be separated by using .....
   a. a filter paper. b. a strong magnet.
   c. a separating funnel. d. the evaporation process.

1 Part

4. All the following are examples of homogeneous liquid mixtures except .....
   a. apple juice. b. orange juice.
   c. tea. d. sugar solution.
5. The substance in which solids dissolve is called ....
   a. solubility process. b. solvent.
   c. solute. d. sugar.

4 (A) Give reasons for the following : *(5 marks)*

1. Mineral water is considered as a mixture.
   .....
2. A mixture of sand and iron filings can be separated easily.
   .....
3. Mud in water is a heterogeneous mixture.
   .....
4. Salt dissolves easily and faster in a large amount of water.
   .....

(B) How does temperature affect the solubility process ?

.....

5 (A) Put (✓) or (✗), then correct the wrong ones : *(5 marks)*

1. The properties of the mixture are the same properties of its components. ( )
   .....
2. Solute + Solvent $\xrightarrow[\text{Process}]{\text{Solubility}}$ Solution. ( )
   .....

(B) Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Stirring	a. used to separate the soluble solid materials.
2. Filtration	b. used in making the solution.
3. Evaporation	c. used to separate the insoluble solid materials.

1. ..... 2. ..... 3. .....

Unit 3 Lesson 1

25

Test yourself 13

Answer each of the following questions :

1 Complete the following statements: *(5 marks)*

1. Predation is less common in ... world than in ... world.
2. Camouflage phenomenon is found in some living organisms such as ... and ...
3. ... ejects a black substance in water when attacked by enemies.
4. Bees which look like wasps undergo ... phenomenon, while chameleon undergoes ... phenomenon to protect themselves from their enemies.
5. There are three types of symbiosis which are ... , ... and ...

2 Choose the correct answer: *(5 marks)*

1. The devoured animal by another animal is known as the ...
   a. saprophyte. b. parasite. c. prey. d. predator.
2. ... can change its colour to be hidden from its enemies.
   a. Frog b. Ascaris worm c. Bee d. Sponge
3. ... ejects a black fluid in the surrounding water to hide from its enemies.
   a Frog b. Cuttlefish c. Butterfly d. Chameleon
4. ... is a phenomenon in which the harmless living organisms imitate other harmful or poisonous living organisms to fear their enemies and escape from them.
   a. Mimicry b. Mutualism c Symbiosis d. Camouflage
5. The relation between nodular bacteria and leguminous plants is ...
   a. mutualism. b. camouflage. c. mimicry. d. predation.

3 (A) Correct the underlined words: *(5 marks)*

1. In predation, the harmed organism is known as the predator.
   (...)
2. Some bees appeal to mutualism relationship to escape from them.
   (...)

1 Part

(B) Mention the kind of food relationship between each of the following:

1. A lion and a deer. (.....)
2. Drosera plant and insects. (.....)
3. Nodular bacteria and leguminous plants. (.....)

4 Write the scientific term: *(5 marks)*

1. A temporary food relationship which ends up by devouring the prey or a part of it. (.....)
2. A phenomenon in which the living organism protects itself from enemies by changing its colour to simulate the colours of its surrounding environment. (.....)
3. A living organism use camouflage phenomenon to hide from its enemies by ejecting a black fluid in the surrounding water. (.....)
4. A method used by a bee to fear its enemies. (.....)
5. A food relationship in which, each organism gets benefit (in the form of food) from the other. (.....)

5 (A) Give reasons for : *(5 marks)*

1. Some plants are known as insectivorous plants.

.....

2. Sepia ejects a black fluid in the surrounding water.

.....

.....

.....

3. Some bees look like wasps in forming stripes on their bodies.

.....

.....

(B) Explain the mutualism relationship between leguminous plants and nodular bacteria.

.....

.....

.....

Unit 3 Lesson 1

25

Test yourself 14

Answer each of the following questions :

1 Choose the correct answer: *(5 marks)*

1. The relationship between sponge and the tiny aquatic living organisms is known as ....

   a. mutualism. b. commensalism. c. predation. d. parasitism.

2. Mosquitoes cause ..... disease to man.

   a. elephantiasis b. small pox c. malaria d. bilharziasis

3. All the following are external parasites except .....

   a. lice. b. ticks. c. lamprey. d. liver worm.

4. Fleas convey ..... disease to man.

   a. malaria b. small pox c. bilharzia d. anaemia

5. Saprophytes are ..... organisms.

   a. parasitic b. autotrophic c. decomposer d. (a), (b) and (c)

---

2 Put (✓) or (✗) , then correct the wrong ones: *(5 marks)*

1. Some living organisms hide from enemies by changing their colour to simulate the colours of their surrounding environment. ( )

   ....

2. The relation between sponge and the tiny aquatic living organisms is saprophytism. ( )

   ....

3. In parasitism, the organism that is harmed is known as the host. ( )

   ....

4. Filaria worm causes small pox disease to man. ( )

   ....

5. Saprophytes as bread mold fungus get their food by killing the prey. ( )

   ....

---

3 Write the scientific term: *(5 marks)*

1. The disease caused by the parasitic ascaris worms. (.....)

1 Part

2. The parasitic worm that causes bilharziasis disease. (.....)

3. A parasite can convey small pox disease to man. (.....)

4. The parasite that conveys diseases to the host as it shares the host its digested food. (.....)

5. A food relationship in which saprophytes get their food by decomposing food remains or bodies of dead organisms. (.....)

4 (A) Compare between commensalism and parasitism: *(5 marks)*

.....

.....

.....

.....

(B) Mention the kind of food relationship between:

1. Bilharzia worms and man. (.....)

.....

2. Jawless lamprey and fish. (.....)

.....

5 (A) Give the name of the parasite that causes the following diseases: *(5 marks)*

1. Elephantiasis.

.....

2. Malaria.

.....

(B) Give reasons for:

1. The relation between spong and the tiny aquatic living organism is commensalism.

.....

2. Host death is considered a loss for the parasite.

.....

3. Parasitism relationship differs from the predation relationship.

.....

.....

Unit 3 Lesson 2

25

Test yourself 15

Answer each of the following questions :

1 Complete the following statements: *(5 marks)*

1. Bodies of living organisms contain some chemical elements such as ..... and .....
2. Some human activities such as ..... and ..... cause the disturbance of the environmental balance.
3. ..... and ..... are from saprophytic organisms.
4. Predators help preys to get rid of ..... or ..... members.
5. The components of ecosystem are ..... and .....

---

2 (A) What happens if ... ? *(5 marks)*

1. Chemical elements are not recycled by saprophytic organisms in the ecosystem.

.....

2. Predators disappear from an environment including few rabbits.

.....

3. Cutting down of trees.

.....

(B) Put (✓) or (✗) :

1. Predators organize the numbers of preys' populations. ( )
2. Ecosystem may be very large as the universe. ( )
3. Interference of man leads to environmental balance. ( )
4. Saprophytic organisms recycle chemical elements within the ecosystem. ( )

---

3 Write the scientific term: *(5 marks)*

1. The relationship which helps preys' populations to get rid of weak or sick members.

(.....)

1 Part

2. The phenomenon which appears among preys' population due to the shortage of food resources in the ecosystem. (..... .....)
3. A natural area including living organisms and non-living things. (.... .....)
4. The organisms which organize the numbers of preys' populations in the ecosystem. (..... .. ..)
5. The phenomenon that had been occured to dinosaurs in ancient eras due to changing of natural conditions. (... ....)

4 (A) What is meant by ... ? *(5 marks)*

1. Ecosystem : ....
2. Environmental balance : ....

(B) How has man benefited from saprophytic organisms in Industry ?

1. ....
2. ....
3. ....

5 Choose the correct answer: *(5 marks)*

1. If there were no predators, preys' populations would .....
   a. disappear. b. become weak.
   c. increase in number. d. die.
2. All the following are large ecosystems except the .....
   a. desert. b. bond. c. forest. d. sea.
3. All the following are living organisms of an ecosystem except .....
   a. insects. b. plants. c. air. d. birds.
4. Predation relationship plays an important role in keeping ..... in the ecosystem.
   a. preys' numbers b. shelters
   c. food resources d. saprophytes' numbers
5. Without the saprophytic organisms, the Earth's surface would be covered with .....
   a. plants. b. living organisms. c. animals. d. dead organisms.

General Exercise of the School Book on Unit 3

1 Complete the following sentences :

1. The interaction between a cat and a rat is an example of .. ..
2. Fungi are considered as .... living ogranisms.
3. Bilharzia worms parasitize on .... and are known as ..... whereas the harmed organism is known as ....

2 Choose one of the following terms to complete the following sentences :
(snake - wheat - sheep - rat - predation)

1. The producer is . ...
2. The predator is .....
3. The herbivorous are ..... and ....
4. The relationship between a snake and a rat is known as . .....

3 Put (✓) or (✗) :

1. Fungi feeding on the dead organisms bodies are called saprophytes. ( )
2. Among the different types of fungi, mushroom is distinguished by its ability to make its food. ( )
3. Spiders use their woven nets for catching insects. ( )

4 Give reasons for the following :

1. Plants are the main food for lions, although lions are carnivorous.

.....

2. Tape worm is a parasite.

.....

5 What is the effect of saprophytes on the environmental balance ?

.....

.....

.....

6 What is meant by ... ?

1. Ecosysystm.

.....

1 Part

1. Environmental balance.

.. ..

7 Choose the correct answer:

1. Green plants are considered as .... organisms.
   a. decomposer b. producer c. consumer
2. An example of decomposers is the ....
   a. fungi. b. rabbits. c. plants.
3. Plants get energy from ....
   a. oxygen. b. chlorophyll. c. sunlight.
4. The process of photosynthesis is done by a .... living organism.
   a. producer b. decomposer c. consumer
5. Bilharzia worms are considered as ..... organisms.
   a. producer b. parasitic c. decomposer

8 Write the scientific term that expresses each of the following sentences :

1. A temporary relationship between two different living organisms that benefits one and harms the other. (.....)
2. A relation between two living organisms that benefit from each other. (.....)
3. A food relation between two living organisms that one benefits and the other doesn't benefit or harm the first one. (.....)

9 What happens when ... ?

1. Herbivorous (as rabbits) decrease in the environment.

. ...

2. Food producers (as green plants) decrease in the environment.

....

3. Man continues cutting forest trees.

... ...

4. Bacteria completely disappear.

. ...

5. Predators disappear from an environment including few rabbits.

....

Model Exam 1 on Unit 3

25

Answer each of the following questions :

1 Write the scientific term: *(5 marks)*

1. The temporary food relationship that ends by devouring the prey or a part of it.
(.....)
2. The phenomenon that had occurred to dinosaurs in ancient eras due to changing of natural conditions. (.....)
3. The organisms which clean the Earth's surface from dead bodies.
(.....)
4. A phenomenon in which the harmless living organisms imitate other harmful or poisonous living organisms to frighten their enemies and escape from them.
(.....)
5. The parasite lives inside the host's body and shares the host its digested food or feeds on its cells and tissues. (.....)

2 Mention the relation between each of the following : *(5 marks)*

1. Plants and animals. (.....)
2. Ascaris worm and man. (.....)
3. Drosera plant and insects. (.....)
4. Sponge and the tiny aquatic living organisms. (.....)
5. Lion and deer. (.....)

3 Complete the following sentences : *(5 marks)*

1. Some autotrophic plants prey insects to get their required elements for making ....
2. The food relationship in which, both organisms get benefit from each other is known as .. ..
3. Bodies of living organisms contain some chemical elements as ..... , ... and phosphorus that return back to the environment with the help of ..... organisms.

1 Part

4. Ecosystem is any ..... area that contains .... and ....

5. The interaction between a cat and a rat is considered as an example of ... .

6. Fleas can convey .... disease to man, while ascaris worm causes . . .. to him.

4 Look at the opposite figure, then answer the following questions : *(5 marks)*

1. What is the food relationship between the plant and the insect ?

... .

2. Why does this plant feed on the insects ?

.. ..

3. After the death of this plant, some organisms called saprophytic organisms feed on the remains of the plant.

Mention the role of these organisms to keep the environmental balance.

.. . .

....

.. . .

5 Choose the correct answer: *(5 marks)*

1. The relation between nodular bacteria and bean plant is . .....

a. predation. b. parasitism. c. mutualism. d. mimicry.

2. . . .. . is a food relationship in which the organism gets its food by decomposing food remains or bodies of dead organisms.

a. Saprophytism b. Parasitism c. Camouflage d. Mimicry

3. Predation relationship .. .. the numbers of the preys in populations.

a. increases b. organizes c. decreases d. prevents

4. Due to the shortage of food resources, ... appears among preys populations.

a. predation b. symbiosis c. competition d. mutualism

5. .... is the phenomenon in which a harmless living organism imitates other harmful living organism.

a. Mimicry b. Symbiosis c. Camouflage d. Mutualism

Model Exam 2 on Unit 3

25

Answer each of the following questions :

1 Choose the correct answer : *(5 marks)*

1. Which of the following is a very large ecosystem ? .. ..

a. The ocean. b The water pond. c. The desert. d. The universe.

2. The ogranism which is harmed is called the .... in the parasitism relationship.

a. parasite b. prey c. host d. saprophytic

3. .. .. are considered decomposers.

a. Fungi b. Plants c. Bacteria d. (a) and (c)

4. Cutting trees to build houses causes the environmental ... ...

a. balance. b. disturbance. c. envelope. d. camouflage.

5. From the chemical elements which is (are) recycled by saprophytic organisms .....

a. carbon. b. phosphorus.

c. nitrogen. d. all the previous answers.

---

2 (A) Give reasons for : *(5 marks)*

1. Some plants eat tiny insects.

.. ..

2. A frog can change its colour.

....

3. The extinction of dinosaurs in anicent eras.

....

(B) Write the scientific term :

1. The balance among the components of the ecosystem. (. . ...)

2. An example of a living organism that disappears due to the disturbance of the environment. (. ... .)

55

Part 1

3 **(A) Compare between predation and parasitism :** *(5 marks)*

.....

.....

.....

.....

(B) Put (✓) or (✗) :

1. Bilharzia worm is external parasite and lice are internal parasites. ( )
2. Changing the natural conditions leads to the environmental balance. ( )

---

4 **(A) Choose from column (B) what suits it in column (A) :** *(5 marks)*

(A)	(B)
1. A food relationship between man and liver worm	a. predation.
2. A food relationship between bean plant and nodular bacteria	b. externally parasitism.
3. A food relationship between cat and rat	c. commensalism.
4. A food relationship between fungi and splashed bread	d. saprophytism.
	e. internally parasitism.

1. ..... 2. ..... 3. ..... 4. .....

(B) Complete the following sentences :

1. .... is the food relationship that organizes the numbers of preys in populations.
2. Saprophytic organisms ..... the chemical elements within the ecosystem.

---

5 **(A) What happens when ... ?** *(5 marks)*

1. A chameleon is attacked by enemies.

.....

2. A cuttlefish is attacked by enemies.

.....

(B) Classify the following into internal parasites and external parasites :
(Lice - Ascaris worm - Liver worm - Bugs - Mosquitoes - Tape worm)

– Internal parasites :

.....

– External parasites :

.....

Test yourself 1

1. 1. The visible spectrum
2. minimized – inverted.
3. transparent materials – frosted glass – tissue paper
4. Shadow
5. transparent – translucent 6. Moon

2. (A) 1. c. straight
2. a. travelling of light in straight lines.
3. a. transparent 4. d. foil paper

(B) Formation of shadow is due to travelling of light in straight lines, where the nearer object to the light source has the bigger shadow.

3. 1 Translucent materials.
2. Opaque material.
3. The Sun. 4. Shadow.
5. Transparent materials.

4. (A) 1. I can see the flame of the candle.
2. I can't see the flame of the candle.
3. Light travels in straight lines.

(B) 1. - Tissue paper.
- Opaque materials.
2. - Wood.
- Transparent materials.

5. (A)

Transparent material	Translucent material	Opaque material
It is the material which lets most light pass through and objects can be seen clearly through it.	It is the material which lets some light to pass through and objects can be seen through it less clearly than the transparent one.	It is the material that doesn't allow light to pass through and objects can't be seen through it.
Examples: Air, water and clear glass.	Examples: Frosted glass and tissue paper	Examples: Wood and foil paper.

(B) 1. I can't see the flame of the candle.
2. I can see the picture clearly through it.

Test yourself 2

1. 1 light reflection. 2. 80
3. a regular – an irregular 4. refracts
5. separation (splitting) of white light.
6. red – violet
7. A source of light – a reflecting surface

2. (A) 1. Due to the refraction of light.
2. Because the drops of water in air act as a glass prism which splits the sunlight into seven spectrum colours.
3. Because the mirror makes a regular reflection for the light rays falling from your image on it.

(B) 1. It splits the white light into seven spectrum colours.
2. They are used to cover windows of darkened photographic rooms.

3. 1 a. light reflection. 2 a. white
3. b. orange. 4. d. 20
5. a. sunlight passes from the drop of rain water to air, then its splitting into seven spectrum colours.

4. (A) 1 (✓)
2. (✗) In the regular reflection, ...
3. (✗) ..... is called light refraction.

(B) 1. reflection
2. regular reflection
3. Irregular reflection

5. (A) 1. Separation of light.
2. Light refraction.
3. Rainbow.

(B) 1. Red. 3. Yellow. 4. Green.
5. Blue. 6. Indigo. 7. Violet.

Test yourself 3

1. 1 white light. 2 Coloured opaque
3. the red colour
4. a white opaque object – a black opaque object
5. reflects – yellow
6. the blue light.
7. Coloured opaque object – coloured transparent object

2. (A) 1 Because white clothes reflect all light colours that fall on them causing the decrease of feeling of heat.
2. Because they absorb all light colours and permit their own colour only to transmit through.
3. Because white object reflects all light colours that fall on it.

(B) (1) Red. (2) Black.

3. 1. Glass prism. 2. White opaque objects.
3. Seven spectrum colours.
4. Coloured transparent object.
5. Coloured opaque object.

4. (A) 1 (✗) 2. (✗) 3. (✗)

(B) 1. The strawberry fruit absorbs all light colours and reflects the red light only.
2. The black object appears black, because it absorbs all light colours that fall on it.

5. 1. d. blue.
2 b. absorbs all light colours and allows the green colour only to pass through
3 a. White opaque object
4. a. all light colours and reflects the red colour only.
5. b. the transmitted light colour.

Test yourself 4

1. - Observation on fig. (a) The apple appears black
- Observation on fig. (b) : The apple appears red.
- Inference : The opaque object is seen in its real colour when you look at it from a transparent object that has the same colour.

2. 1. Red - green - blue
2. Yellow - magenta - cyan
3 red - blue 4 red - black

3. (A) 1 Because they are produced by mixing two of the primary coloured lights.
2. Because it can't be produced by mixing two of the other coloured lights.
3. Because the yellow banana reflects the yellow colour which is absorbed by the green glass sheet and doesn't transmit through it, so the banana seems black.

(B) 1 Cyan light colour is produced.
2. White light colour is produced.

4. 1 a. yellow.
2. b. Primary coloured lights
3. b. red and blue 4. a. black.
5. a. Red and green.

5. (A) 1. the primary coloured lights.
2. ① Red. ② Blue.
③ Cyan. ④ White.

(B) 1 White light.
2. Secondary coloured light.

Test yourself 5

1. 1 b. reflects all light colours
2. b. nearer
3. c. magenta
4. d. regular reflection
5. c. blue

2. (A) 1. Because the book is an opaque material that doesn't allow light to pass through.
2. Because the orange reflects the orange colour which is absorbed by the green glass sheet and doesn't transmit through it, so the orange [illegible].
3. Because it consists of seven colours called spectrum colours.

(B) 1. A minimized and inverted image for the candle flame is formed on the semi-transparent paper
2. The formation of images through narrow holes is due to the travelling of light in straight lines.

3. 1 red - green
2. Rainbow - splitting (separation)
3. reflect. 4. refracts - different
5. blue. 6. red - black

4 (A) 1. (✗) ..... on a smooth surface.
2 (✗) ....., and blue light .. ....
3. (✗) ..... is a translucent material.
(B) 1. Irregular reflection.
2 Opaque material.

5 (A) 1. The spoon seems broken due to the reflection of light.
2. The black T-shirt absorbs all light colours and doesn't reflect any colour, so it appears black.
3. No shadow is formed.
(B) 1 Yellow.
2. Frosted glass.

Test yourself 6

1 1 Magnesia – iron. 2. natural - artificial
3. North pole – south
4. non-magnetic materials – magnetic materials.
5. two magnetic poles – middle

2 (A) 1. Because it always points to the north direction of the Earth, but the other points to the south direction of the Earth.
2. Because it is attracted to the magnet.
(B) 1. The magnet has two poles.
2 The freely moving magnet always takes a fixed direction which is north - south direction.
3. The similar magnetic poles repel each other, but the different magnetic poles attract each other.
4. The magnet is surrounded by an area called magnetic field.

3 1. b. iron 2 a. north
3. c. Cobalt 4. c. two poles
5. b. magnetic field

4 (A) 1. (✗) Iron.....
2. (✗) ..... has two poles.
3 (✓) 4. (✓)
(B) a. Magnetic needle.
b. Bar magnet.

5 (A)

Magnetic materials	Non-magnetic materials
Iron nails nickel - cobalt	Wood - plastic - aluminium.

(B) - Chalk.
- chalk is a non-magnetic material, while the other materials are magnetic materials.

Test yourself 7

1 (A) 1 North pole. 2. Magnetic field.
(B) 1. The magnetic needle takes a fixed direction which is north-south direction.
2. The two poles attract each other.
3. The iron filings are arranged around the magnet in a regular way and assembled at the two poles of the magnet.

2 1 repel – attract
2. The compass – fixed axis.
3. William Gelbert – the compass.
4. magnetic materials.
5. Magnetic force – magnetic
6 the two poles

3 (A) 1. Because its north pole points to the north direction of the Earth and its south pole points to the south direction of the Earth.
2. Because the like magnetic poles repel each other, while the dislike magnetic poles attract each other.
3. Because it is used to locate the main four geographical directions.
(B) 1. (✗) ..... to the south direction of the Earth.
2. (✓)

4 (A) 1. c. small light magnetic needle
2. b. cobalt.
(B) It is the ability of the magnet to attract the magnetic materials existed in its field.

5 (A)

Points of comparison	Magnetic materials	Non-magnetic materials
Definition :	They are the materials which are attracted to the magnet.	They are the materials which are not attracted to the magnet
Examples :	Iron - steel - cobalt	Chalk - glass - paper

(B) - Its composition:
It consists of a light and small magnet (magnetic needle) that can spin freely around a fixed axis.
- Its useage:
It is used to locate the main four geographical directions.

Test yourself 8

1 1 Glass - aluminium
2. minimized - inverted
3. transparent - translucent
4. repel - unlike
5. refracts
6. north-south

2 (A) 1. The iron nails are not attracted to the middle of the magnet.
2 It reflects regularly.
(B) 1 Magnetic materials.
2. Translucent materials.
3 The compass.

3 1 c. darkened 2. d. black
3. c. spectrum colours
4 d. south 5. The Sun

4 (A) 1. Because light travels in straight lines.
2. Because white clothes reflect all light colours that fall on them causing decrease in the feeling of heat.
3. Because they are attracted to the magnet.
(B) 1. two
2. red

5 (A) 1. c 2. d 3. b 4. a
(B) 1 It is used to identify the main four geographical directions.
2 It separates white light into seven colours called spectrum colours.

Test yourself 9

1 1. the electromagnet. 2. deflects.
3 The electromagnet
4. an electromagnet (temporary magnet).
5. the electric – magnetic
6. Big-sized winch (crane) – electric bell
7 Increasing the number of coil turns – increasing the number of batteries

2 (A) 1. The wrought iron nail attracts the iron filings.
2. When an electric current passes through a coil winded around a wrought iron bar, the iron bar becomes an electromagnet.
(B) Big-sized winch (crane) , electric bell , electric mixer, disc drive and television.

3 (A)1. To increase the magnetic force of the electromagnet.
2. Because it is used in factories to lift the heavy iron or steel blocks and it is used in making many appliances as electric bell, electric mixer, disc drive and television.
3. Because the electric current has a magnetic effect, where it generates a magnetic field.
(B) *Look at the main book on pages (71).*

4 (A) 1. The electromagnet. 2. The compass.
3 The electromagnet.
4. Big-sized winch (crane)
(B) 1 Increasing the number of coil turns.
2. Increasing the number of batteries.

5 (A) 1 (✓) 2 (✓)
3. (✗) ..... by increasing the number of batteries.

(B) 1. The iron nail becomes an electromagnet and attracts the paper clips.
2. The electromagnet loses its magnetism.

Test yourself 10

1. 1. c. mechanical energy into electric energy.
2. d. (a) and (b).
3. b. copper
4. a. Faraday
5. b. Dynamo

2. (A) Electric current is generated in the copper wire.
(B) 1. It is used in making electric bell and electric mixer.
2. It is used to change the kinetic energy into electric energy.

3. (A) 1. Because by moving the magnet inside the coil, an electric current is produced.
2. Due to the generation of more electric current through the copper wire.
3. To generate large amount of electricity used for lightening cities and operating factories.
(B) 1. Using a strong magnet.
2. Increasing the number of turns of the moving coil.

4. 1. Small dynamo in the bicycle – huge electric generator
2. electric current.
3. mechanical energy – electric energy.
4. using a strong magnet – increasing the number of turns of the moving coil.
5. small cylinder – a coil.
6. an electric

5. (A)

Natural magnet	Electromagnet
It is a black rock of one of the iron ores which is known as magnetite.	It is a device that used to convert the electric energy into magnetic energy.

(B) 1. an electric current. 2. dynamo
3. mechanical – electric
4. electricity – lightening cities and operating factories.

General Exercise of the School Book on Unit 1

1. 1. compass
2. magnetic field
3. poles
4. repel
5. Unlike
6. electromagnet.
7. electric generator.

2. (A) 1. Irregular reflection.
2. Opaque materials.
3. Light refraction.
4. Spectrum colours.
5. Primary coloured lights.
6. Secondary coloured lights.
7. Magnetic materials.
8. Two poles of magnet (magnetic poles).
9. Dynamo.

3. (A) 1. (✓)
2. (✗) ..... when the drops of rain water separate the sunlight.
3. (✓)
4. (✗) ..... that travel through.
5. (✓)
6. (✗) ..... the secondary colours.
7. (✓)
8. (✗) Iron gets .....
9. (✓)
10. (✓)
11. (✗) ..... through a coil winding around a wrought iron bar.

Model Exam (1) on Unit 1

1. 1. d. magnetic force.
2. a. the same colour
3. d. (a) , (b) and battery.
4. b. an irregular reflection.
5. b. passing more electric current.

2. 1. Transparent materials.
2. Non-magnetic materials.
3. The huge electromagnet.
4. Rainbow.
5. White opaque object.

3. (A) 1. Because dark clothes absorb all light colours that fall on them causing the feeling of warmth.

2. Because the attraction force of the magnet is concentrated at the two poles of the magnet.
3. Due to passing the electric current in the wire.

(B) • Yellow is produced by mixing red and green coloured lights.
• Magenta is produced by mixing red and blue coloured lights.
• Cyan is produced by mixing blue and green coloured lights.

4. (A) 1. attract
2. repel
3. similar magnetic - different magnetic
(B) 1. (✗) 2. (✗)

5. (A) 1. transparent - translucent
2. green colour.
3. repel - attract
(B) d. Increasing the number of turns in the coil and the number of batteries.

Model Exam (2) on Unit 1

1. 1. mechanical (kinetic) – electric
2. red – green
3. bigger
4. magnetic materials – non-magnetic materials
5. red
6. seven – glass prism.

2. (A) 1. (✗) 2. (✓)
3. (✓) 4. (✗)
(B) 1. A white light is formed.
2. The piece of wood is not attracted to the magnet.
3. The generation of the electric current in the coil of the dynamo increases.

3. 1. Primary coloured lights.
2. The huge dynamo.
3. The visible spectrum.
4. Two poles of magnet (Magnetic poles).
5. The compass.

4. (A) 1. To avoid the attraction between the magnetic needle and the iron box of the compass.
2. Because it changes the electric energy into magnetic energy.
3. Because light travels in straight lines.
(B) 1. electromagnet.
2. absorbs

5. (A) 1. a. reflection
2. c. north-south
3. d. black
(B) 1. (a) Magnet.
(b) Coil.
2. electric current-lights

Test yourself 11

1. 1. pure substance.
2. Mineral water – magnesium.
3. Evaporation process
4. magnetic attraction – filtration process – separating funnel
5. Separating funnel
6. shaking – grinding.

2. (A) 1. Mixture.
2. Magnetic attraction.
3. Evaporation process.
(B) 1. (✓)
2. (✗) We use filtration process to .....

3. (A) 1. Because air consists of more than one type of particles.
2. Because each of them consists of only one type of identical particles.
(B) 1. By using a magnet, iron filings can be separated.
2. Add water and stirring to dissolve the salt, while the sand precipitates.
3. By filtration process, sand can be separated from the salt solution.
4. By evaporation process, water evaporates and salt can be collected.

4. (A) 1. Mixture. – Salt and water.
2. Mineral water. – Mixture.
3. Table salt.
(B) 1. separating funnel. 2. water-oil
3. filtration process – evaporation process - magnetic attraction

5. (A) 1. It is used in formation of mixtures (solutions) such as salty solution.

2. It is used to separate the insoluble solid substances from solid-liquid mixtures.

(B) 1. Oil doesn't mix with water forming a layer over it.

2. No substance remains, because the distilled water is a pure substance.

Test yourself 12

❶ 1. Solute – Solvent – Solubility
2. homogeneous
3. heterogeneous a suspension.
4. chocolate – milk 5. Stirring – heating
6. Solvent

❷ (A) 1. Solvent. 2. Solubility process.
3. Suspension.
(B) 1. Quantity of solvent and solute.
2. Temperature. 3. Stirring or shaking.
4. The kind of the solute.
5. Grinding the solid materials.

❸ (A) 1. b. the amount of solute
2. c. Water
3. a. a homogeneous
(B) 1. Because by increasing the amount of solvent, the solubility time decreases.
2. Because as the temperature of the solution increases, the solubility speed increases.

❹ (A) 1. (✗) .... decreases ....
2. (✗) .... is a heterogeneous suspension.
3. (✓)
(B) 1. It is a homogeneous mixture in which the solute breaks down into its most basic particles and spread throughout the solvent.
2. It is the substance in which the solute dissolves.

❺ (A) 1. Dissolving 10 gm. of baking soda is faster than 20 gm. in the same amount of water.
Because: As the amount of solute decreases (in a certain amount of solvent), the solubility time decreases.

2. Dissolving sugar with stirring is faster than that without stirring.
Because: Stirring process decreases the solubility time.
(B) 1. temperature – solubility
2. decreases.

General Exercise of the School Book on Unit 2

❶ 1. It is the substance that consists of more than one type of particles.
2. It is a homogeneous mixture in which the solute breaks down into its most basic particles that spread throughout the solvent.
3. It is the process by which a solute dissolves in a solvent leading to the disappearance of the solute.

❷ - Fruitsalad solid-solid mixture) - Oil and water (liquid-liquid mixture) - Sand and water (solid-liquid mixture).

❸ 1. (✓)
2. (✗) .... increases .... 3. (✓)
4. (✗) .... increases ....
5. (✓). 6. (✓).

❹ 1. Heating on the burner is faster than that evaporation of sea water in sunlight.
Because the burner is hotter than the sunlight.
2. Dissolving of grinded solids before adding them to a liquid is faster than breaking them down into small pieces.
Because grinding the solid materials increses the speed of their solubility.
3. Dissolving of sugar grains is faster than cubes in water.
Because grinding the solid materials increases the speed of their solubility.
4. Dissolving salt in 300 ml. of water is faster than that in 100 ml. of water.
Because the increasing in the amount of solvent decreases the solubility time.

❺ a. Sugar. – Water.
b. Salt. – Water.

❻ 1. By using filter paper which separates mud and lets water pass.
2. By using filter paper which separates sand and lets water pass.
3. By evaporation process where, water evaporates leaving salt.
4. By evaporation process where, water evaporates leaving sugar.

❼ Evaporation-salt. – water.

Model Exam (1) on Unit 2

❶ (A) b. Powdered sugar will dissolve faster.
Because grinding the solid substances decreases the solubility time.
(B) By using a magnet, magnetic attraction separates iron filings from salt.

❷ 1. heterogeneous - homogeneous
2. shaking - stirring.
3. Fruit salad - soda water
4. decreases the solubility time
- increases the solubility speed.
5. Suspension–filtration process.

❸ (A) 1. Because increasing the temperature decreases the solubility time.
2. Because by evaporation process of salt solution, water evaporates and the salt remains, so it can be collected easily.
3. Because it consists of more than one type of particles.
(B) By using filter paper which separates coffee and lets water pass.

❹ 1. d. magnetic attraction.
2. a. increasing the solubility time.
3. a. filtration process.
4. d. tomato sauce.
5. a. A mixture of vinegar and water.

❺ (A) (2) Stirring ⟶ (1) Filtration
⟶ (3) Evaporation
(B) 1. The solute is salt and sand, while the solvent is water.
2. It decreases the solubility time.

Model Exam (2) on Unit 2

❶ (A) 1. Evaporation process.
2. Solution.
3. Heterogeneous mixture.
(B) 1. Evaporation process.
2. Filtration process.

❷ 1. carbon dioxide - oxygen
2. mixture - calcium
3. Filtration
4. a solute - a solvent - solubility
5. solute - solvent.

❸ 1. a. a magnet.
2. d. shaking process.
3. c. a separating funnel.
4. b. orange juice.
5. b. solvent.

❹ (A) 1. Because mineral water consists of more than one type of particles such as water, calcium and magnesium.
2. Because by using a magnet, iron filings are attracted to the magnet and separated from sand.
3. Because the particles of mud can be distinguished from water.
4. Because when the amount of solvent increases, the solubility time decreases.
(B) By increasing the temperature of the solution, the time of the solubility decreases.

❺ (A) 1. (✓) 2. (✓)
(B) 1. b 2. c 3. a

Test yourself 13

❶ 1. plant – animal
2. frog – chameleon.
3. Sepia
4. mimicry – camouflage
5. mutualism – commensalism – parasitism.

❷ 2. a. Frog 1. c. prey
3. b. Cuttlefish 4. a. Mimicry
5. a. mutualism.

❸ (A) 1. prey. 2. mimicry
(B) 1. Predation. 2. Predation
3. Mutualism.

❹ 1. Predation. 2. Camouflage.
3. Cuttlefish. 4. Mimicry.
5. Mutualism.

❺ (A) 1. Because these plants prey some insects to get their required elements for making protein.
2. To hide when attacked by enemies.
3. To fear their enemies which get afraid from wasps and escape from them by mimicry phenomenon.

(B) Each of the leguminous plants and the nodular bacteria benefit from the other in form of food where:
- Nodular bacteria fix nitrogen in an inorganic form and supply the plant with it.
- Leguminous plants supply the nodular bacteria with sugar made by the plant during photosynthesis process.

Test yourself (14)

❶ 1. b. commensalism.
2. c. malaria
3. d. liver worm.
4. b. small pox
5. c. decomposer

❷ 1. (✓)
2. (✗) ..... is commensalism. 3. (✓)
4. (✗) ..... elephantiasis disease to man.
5. (✗) ..... decomposing the food remains.

❸ 1. Anaemia.
2. Bilharzia worm.
3. Flea.
4. Internal parasite.
5. Saprophytism.

❹ (A)

Points of comparison	Commensalism	Parasitism
1. Definition:	It is a food relationship between two living organisms where, one of them benefits from the other, while the other neither gets benefit nor is harmed.	It is a food relationship between two different kinds of living organisms, where one benefits from the other and is known as the parasite, while the other is harmed and is known as the host.
2. Example:	The relation between sponge and the tiny aquatic living organisms.	The relation between ascaris worms and man.

(B) 1. Internal parasitism.
2. External parasitism.

❺ (A) 1. Filaria worm. 2. Mosquitoe.
(B) 1. Because the tiny aquatic living organisms get food and shelter from the canals and fissures that found inside the sponge ,but sponge neither gets benefit nor is harmed.
2. Because the parasite will lose its source of food and shelter.
3. Because in parasitism, the parasite depends completely on the host to get its food and causes weakness to the host, but doesn't kill it as the predator does with its prey.

Test yourself (15)

❶ 1. carbon – nitrogen.
2. cutting trees – burning forests
3. Bacteria – fungi 4. weak – sick
5. living organisms – non-living things.

❷ (A) 1. The other living organisms can't get benefit from these elements.

2. The number of rabbits will increase, so the food resources become insufficient (not enough for rabbits) that leads to competition between them, so rabbits will die.
3. It causes disturbance in the environmental balance.

(B) 1. (✓) 2. (✓) 3. (✗) 4. (✓)

❸ 1. Predation. 2. Competition.
3. Ecosystem. 4. Predators.
5. Extinction.

❹ (A) 1. It is any natural area including living organisms and non-living things.
2. It is the balance among the components of the ecosystem.

(B) Man benefits from saprophytic organisms in:
1. Food industry : in making cheese, bread and yoghurt.
2. Drug industry : in making antibiotics.
3. Leather tanning industry.

❺ 1. c. increase in number
2. b. bond.
3. c. air.
4. a. preys' numbers
5. d. dead organisms.

General Exercise of the School Book on Unit 3

❶ 1. predation relationship.
2. decomposers.
3. man - internal parasites - the host.

❷ 1. wheat. 2. snake.
3. sheep and rat. 4. predation.

❸ 1. (✓) 2. (✗) 3. (✓)

❹ 1. Because lions feed on animals (as deers) which feed on green plants.
2. Because it lives inside man to get food and man is harmed.

❺ Saprophytic organisms help the environment in :
a. Getting rid of the bodies of dead organisms by decomposing them.
b. Recycling the chemical elements found in the bodies of dead organisms (as carbon, nitrogen and phosphorus) to the environment to make other living organisms benefit from them.

❻ 1. It is any natural area including living organisms (as plants and animals) and non-living things (as water, soil and air).
2. It is the balance among the components of ecosystem.

❼ 1. b. producer 2. a. fungi.
3. c. sunlight 4. a. producer
5. b. parasitic

❽ 1. Predation. 2. Mutualism.
3. Commensalism.

❾ 1. A competition appears among the predators that feed on herbivorous, so the number of predators will decrease.
2. Death of all organisms.
3. A disturbance in the environmental balance will take place.
4. - The Earth's surface will be covered with the bodies of dead organisms.
- Chemical elements found in the bodies dead organisms will not be recycled to environment.
5. The number of preys (rabbits) increases and the food resources become insufficient for preys that leads to the competition between preys, so they will die.

Model Exam (1) on Unit 3

❶ 1. Predation. 2. Extinction.
3. Saprophytic organisms.
4. Mimicry 5. Internal parasite.

❷ 1. Animals feed on plants to get food and energy.
2. Internal parasitism. 3. Predation.
4. Commensalism. 5. Predation.

❸ 1. protein 2. mutualism
3. carbon – nitrogen – saprophytic
4. natural – living organisms – non-living things.
5. predation.
6. small pox – anaemia

4 1. Predation.
2. To get its required elements for making protein.
3. The saprophytic organisms as bacteria and fungi help the environment in :
a. Getting rid of the bodies of dead organisms by decomposing them.
b. Recycling the chemical elements found in the bodies of dead organisms (as carbon, nitrogen and phosphorus) to the environment, to make other living organisms benefit from them.

5 1. c. mutualism. 2. a. Saprophytism
3. b. organizes 4. c. competition
5. a. Mimicry

Model Exam (2) on Unit 3

1 1. d. The universe. 2. c. host
3. d. (a) and (c) 4. b. disturbance.
5. d. all the previous answers.

2 (A) 1. to get their required elements for making protein.
2. To hide from its enemies by camouflage.
3. Due to the change in the natural conditions in the ecosystem that causes the disappearance of dinosaurs.
(B) 1. Environmental balance.
2. Dinosaurs.

3 (A)

Points of comparison	Predation	Parasitism
1. Definition:	It is a food relationship among living organisms, in which one living organism devours another one.	It is a food relationship between two different kinds of living organisms, where one benefits from the other and is known as the parasite, while the other is harmed and is known as the host.
2. Harms that occur to the host or prey :	The prey is killed in this relationship.	The host becomes weak.
3. Example :	The relationship between a cat and a rat.	The relationship between jawless lamprey and fish.

(B) 1. (x) 2. (x)

4 (A) 1. a 2. c 3. a 4. d
(B) 1. Predation. 2. recycle.

5 (A) 1. It simulates the colours of its surrounding environment.
2. It ejects a black fluid in the surrounding water.
(B) Internal parasites:
Ascaris worm - Liver worm - Tape warm.
External parasites :
Lice - Bugs - Mosquitoes.

PART THREE

Guide Answers of Final Exams